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FRAUD OR FICTION: WHO STOLE WHAT IN RUSSIA'S DECEMBER 1993 ELECTIONS

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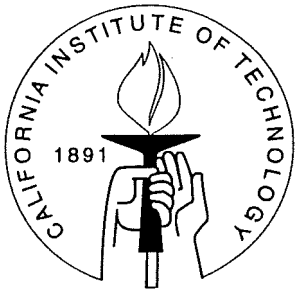

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Abstract

Serious allegations of fraud have been made with respect to Russia's first competitive party-based parliamentary election in December 1993 - the same election in which Russian's ostensibly ratified a new constitution for themselves. Although charges of fraud are common in elections, these allegations are especially serious in that the argument here was that over 9 million ballots were fraudulently cast and that the turnout threshold of 50% required to render the constitutional referendum legitimate was in fact not surpassed. These are profoundly important allegations. First, they bring into question the legitimacy of Russia's new constitution and thereby offer its opponents an excuse to suspend its provisions some time in the future. Second, they naturally enough cause us to be suspicious of Russia's December 1995 parliamentary elections. Finally, to the extent that the same methods for detecting fraud are likely to be applied to subsequent elections, if they revel significant levels of fraud there, they can provide an excuse for canceling those elections or invalidating their results. In this essay, then, we look at the two methodologies employed to detect and measure the extent of fraud in 1993. Without disputing the possibility that fraud was in fact extensive, we conclude that neither methodology as presently developed is adequate to the task at hand. The first, which assumes that we should observe a linear relationship between the log of the rank of parties and the log of their support at the polls employs a number of ad hoc assumptions and a priori estimates that, in sum, are equivalent to assuming the conclusion. The second method, which looks at the relationship between turnout and the share of the electorate voting for one party or position versus another, is subject to a number of methodological pitfalls, including aggregation error and the possibility that unobserved variables correlate with both turnout and support so as to render any relationship indeterminate. Nevertheless, of the two methodologies, the second is the most promising for further development and our critique of it is intended to point the way to the requisite developments.

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Fraud or Fiction: Who Stole What in Russia's December 1993 Elections

Mikhail Filippov and Peter C. Ordeshook

The results of Russia's first competitive party-based elections and constitutional referendum of December 12, 1993 have been the subject of considerable controversy. According to one observer, Russian physicist Alexander Sobyanin, who served at the time as one of Yeltsin's political analysts and the representative for Russia's Choice on the Central Election Commission, no fewer than 9 million ballots were falsified to favor communists, nationalists, regional leaders, and Yeltsin's constitution. Unsurprisingly, the "formal" report of such allegations in March 1994 (Sobyanin and Suchovolsky 1994) received worldwide notice. Isvestia called it "political dynamite" and the U.S. media prominently reported the claim that more than 15 percent of the ballots were falsified and that turnout had not exceeded the 50% threshold required to render Russia's constitutional referendum legitimate. Despite their notoriety, these allegations have been largely ignored by political analysts, vis-a-vis the absence of any independent attempt to verify or disconfirm them. This is unfortunate not only because such allegations cast a cloud on the legitimacy of Russia's infant constitutional structures and because, as we see in the aftermath of the latest (December 1995) Russian parliamentary elections, they encourage losers to attribute their electoral failures to trickery and fraud (Maximov 1995), but also because it is useful in general to develop methods for detecting fraud when an election's administration cannot be observed directly (Carey 1995). Russia is not the only country in which the remoteness of polls and the authority of regional politicians make it difficult for neutral observers to monitor elections. But unlike the commonplace cries of 'foul' commonly uttered by losing politicians everywhere, Sobyanin and his colleagues propose several methods for detecting fraud using aggregate election data, and it is thereby important that those methods be given closer scrutiny than they have heretofore received.

Insofar as the specifics of the Russian case are concerned, the general acceptance of allegations of fraud is unsurprising. First and most suspiciously, official elections returns have never been published except at a level of aggregation (regions and Duma election districts) that precludes reanalysis. Second, given the brief period between Yeltsin's announcement of the election and the actual balloting (less than two months), neutral third-party observers had little time to organize effective oversight. Third, the Central Election Commission, authorized to oversee and police virtually every aspect of Russia's infant electoral system, largely prohibited

party observers from any meaningful oversight of ballot counting and tabulation. Fourth, although a modicum of democratic process had begun to characterize election procedures in Russia's urban centers, there is little reason to believe that such processes had yet invaded a Stalinist system designed to report turnout rates in excess of 99.8% and virtually unanimous support for official candidates.

These considerations, in combination with the stakes of the election -- control of both chambers of the national legislature and adoption of a new federal constitution -- would lead even cautious observers to look for the star in the east if it could be established that substantial fraud did not occur at some level. Claims of large-scale fraud also make sense in that they point to a seemingly logical logroll that benefitted a wide cross-section of political interests. Rather than under-count the votes for specific candidates, the asserted fraud consisted largely of added ballots cast in ways the benefitted most of those who were positioned to contest the election's legitimacy: communists and nationalists, whose share of seats in the Duma were increased by the fraudulent ballots, regional bosses whose positions in the Federation Council were secured by those ballots, and Yeltsin and his coterie of reformers, who required the additional official turnout to legitimize voter approval of their strongly pro-presidential constitution. In addition, one need not presume the existence of any well-organized conspiracy. Regional or sub-regional-level officials, anxious to satisfy their bosses, would have a clear incentive to "facilitate" the election of those bosses to the Federation Council and to play a possibly unwitting hand in facilitating the implementation of the logroll.

The failure to reassess Sobyanin's analysis, though, was precluded by more than the unavailability of data or by an unwillingness to assume that Russian elections could be free of significant fraud. His original report, including its methodology, has been published in a form that only hints at technical details. Although most Russian papers reported its conclusions, none explained the methodology, and Western readers could find only a brief description of it in an article translated and published in 1994 (Gelman, Sobyanin, and Kaiunov 1994). Fortunately, more recent publications (Sobyanin 1995, Sobyanin and Suchovolsky 1995, Myagkov and Sobyanin 1995) have filled in some technical gaps, provided the data employed in the original analysis, and augmented the original method for detecting fraud with a second method. Thus, our goal is to reexamine both methodologies.

Our reassessment leads largely to a series of negative conclusions. Although we cannot preclude the possibility of fraud as alleged, we cannot validate the conclusion that nine million or more ballots were added to the count. Even if fraud took precisely the form suggested, the methodologies employed are ill-equipped for detecting it, for measuring its magnitude, or, given the quality of the data available, for distinguishing between the null hypothesis that there was fraud (the assumption of Sobyanin and his associates) and the hypothesis that there was no fraud (the usual hypothesis when using any methodology for validating such things). In offering these conclusions, this essay is organized as follows: Section 1 reviews some of the reasons why suspicions of fraud first arose in the December elections and Section 2 turns to the original method of analysis employed by Yeltsin's analytical research team. Our conclusion here is that the 'anomalies' in the data taken as evidence of fraud may be little more than the logical consequences of a political competition and a country's electoral laws. Moreover, the application of this method requires a priori knowledge of fraud, of who benefitted from fraud, and of the approximate magnitude of that fraud. Section 3 focuses on the constitutional referendum and

'anomalies' in the data cited by the second method in the relationship between turnout and support for the constitution. Here we conclude that these anomalies are little more than the consequence of aggregating data across regions and that within-region patterns correspond closely to the patterns Sobyanin cites as 'normal.' Section 4 offers the additional argument that even if aggregation error is not present, we cannot exclude the possibility that otherwise anomalous patterns in the constitutional referenda data are the consequence of the different strategies of opponents and supporters of the constitution. Section 5 looks at the party list voting for the Duma and argues that although we cannot explain the anomalies in the data here in precisely the same way as we do for the constitutional referenda, we can nevertheless detect the consequences of aggregating the data across urban and rural voting districts -- consequences that would yield an over-estimation of the magnitude of fraud. Finally, Section 6 argues that even if we can accommodate the issue of aggregation, some notes of caution about inferring the magnitude of fraud from the proposed methodology are still warranted, and Section 7 offers some concluding remarks.

1. First Suspicions

Largely for the reasons we cite earlier, Sobyanin and his associates, long before the December 1993 balloting, anticipated that fraud would be pervasive. The allegation of widespread fraud, though, might not have received much attention had the election's outcome been different. At least among journalists and the population in general, the suspicion that something was amiss arose as soon as it became evident that, with 22.8 percent of the party-list vote for the Duma, Vladimir Zhirinovsky's Liberal Democratic Party of Russia (LDPR), had outpolled democratic reformers, and Russia's Choice in particular. Although many commentators concluded that Zhirinovsky ran a far more effective campaign than his opponents (Wyman, Miller, White and Heywood 1994; Lentini 1994; Hughes 1994), and that his relative success revealed a correspondence between radical electoral choices and deteriorating socio-economic circumstances, neutral observers and not a few of Russia's reformers were skeptical of an election in which Russia's Choice, with 15% of the party-list vote, barely exceeded the support garnered by the Communist Party and its fellow traveler, the Agrarians. Ultimately, Russia's Choice emerged as the Duma's largest voting block, but only because of its success in the single member constituencies, where the name recognition of its candidates overcame the incoherent claims of thirteen competing parties in a hastily called election. How, democratic reformers asked, could the primary vessel of democratic reform fail except by fraud when it enjoyed such obvious advantages as direct access to the Kremlin, control of the mass media, an adequate supply of campaign funds, and the truth?

People, though, should not have been surprised by the outcome. The surprise was occasioned largely by opinion surveys, published in October and November, which put Russia's Choice in the lead with between one-third and two-fifths of the vote and which estimated Communist Party and LDPR support at between 3% and 10%.[1] Most of these surveys, though, were conducted exclusively in large industrial cities such as Moscow and St. Petersburg, where Russia's Choice

[1] See, for example, *Sevodnya*, October 30, 1993; *Izvestia*, November 9, 1993, and *Argumenty I Facty*, # 44, November 1993.

obtained a plurality of party list votes (34.7% in Moscow, 27% in St.Petersburg), and even ostensibly representative polls would have difficulty monitoring the views of backwards rural areas since rural sub-samples tend to be settlement points near major cities (Wyman et al. 1995, Shlapentokh 1994, Rose 1995). Several polls did in fact record a significant increase in the popularity of the LDPR during the last weeks of the campaign. For example, the All-Russian Center for Public Opinion Research initially recorded support for the LDPR at 4 percent a month before elections, at 15 percent a week before the vote, and at 24 percent in a post-election survey. Similarly, pre-election and post-election polls conducted by researchers from the University of Glasgow noted that the LDPR's support more than doubled during the final weeks of the campaign (Wyman et al, 1994, 1995) and that at least 18 percent of voters voted for a party other than the one they said they would vote for a weak before election. This experience with late shifts in voter intentions, duplicated in other newly developing democracies, is easily explained by weak partisan attachments, by the absence of meaningful party labels, and by the presence of numerous parties and politicians campaigning on essentially indistinguishable platforms. In retrospect, that Russia's Choice failed to meet its objectives or that Zhirinovsky out-polled his opponents cannot be taken as prima face evidence of fraud. It is evidence only that political analysts in Russia were unfamiliar with the potential volatility of electorates in emerging democracies. The reasons for believing that widespread fraud had occurred in 1993 would have been no more or less compelling had initial expectations been met.

2. **First Analysis**

Although various stories can be told about how fraud was implemented (Orttung 1995, Sobyanin and Suchovolsky 1995), allegations of widespread fraud in 1993 are based less on first hand observation and more on the discovery of various 'anomalies' in the election returns -- the 'fingerprints' left by those who added ballots to the total or who otherwise manipulated summary election returns. Two sets of fingerprints and correspopnding methodologies for detecting them are offered as evidence, and both warrant close scrutiny since each, if legitimate, promises a way to assess the magnitude of fraud when first-hand observations are unavailable.

First, though, it is useful to recount the basis for the original estimate of 9.3 million falsified (added) ballots. Briefly, having noted that support for the constitution was surprisingly constant across Russia -- approximately 31 to 32 percent of the eligible electorate -- Sobyanin et al also noted that the vote *against* the constitution varied greatly. Ignoring the arguments put forth for this particular classification, eleven regions were identified as "relatively honest," with the percentage supporting the constitution there, among those voting, is as follows:

Moscow	68%
St Petersburg	70%
Sverdlovsk region	78%
Chelyabinsk region	75%
Perm region	77%
Magadan region	67%
Kamchatka region	68%
Archangelsk region	71%
Murmansk region	69%

Karelia	69%
Tomsk region	66%

Assuming that the true percentage of voters who cast ballots for the constitution was 70% uniformly throughout Russia and that the actual number of votes cast 'against' was three sevenths of the number voting 'for' (33 million), it follows that the number voting 'against' was 3/7 times 33 million or approximately 14 million. Adding 14 million to 33 million, plus the 2 million invalid ballots cast on the referendum yields an estimate of 49 million ballots. Subtracting this number from the official count of 58.2 million ballots yields the reported 9.2 million added ballots.

Of course, such back-of-the-envelope calculations are hardly persuasive. Nor do they promise any universal method for detecting and measuring fraud. For these more general ends we need to turn to Sobyanin and Suchovolsky's (1994) adaptation of a 'universal law' relating the rank of objects according to some criterion to the value that criterion assumes for each object. Briefly, consider city population. Suppose we order cities from most to least populous, letting $R(I)$ be city I's rank and $P(I)$ its population. Then if we take a diverse enough sample, it is by now demographic folklore that the relation between R and P will correspond approximately to the equation (Rosen and Resnik 1980),

$$R(I)P(I)^b = A$$

where b and A are constants. Notice now that if we take the log of both sides of this equation we get

$$\log R(I) + b\log P(I) = \log A \qquad (1)$$

which is merely the equation for a straight line. That is, if we let $y = \log R(I)$ and $x = \log P(I)$, $K = \log(A)/b$ and $B = 1/b$, our data should be consistent with the following expression:

$$x = K - By \qquad (2)$$

Expression (2) captures people's attention because it appears to apply to a diverse range of phenomena, in addition to the population of cities, such as the populations of various species and the rank of industrial firms as measured by gross annual sales. As a consequence, numerous researchers have sought to justify this expression as a law-like generalization. And here, insofar as our research concerns the number of voters who vote for different political parties, the most relevant study is Simon (1955) and Ijiri and Simon's (1974) analysis of firm size. Together, these studies show theoretically that if the growth rate of firms is independent of size, if there is free entry of new firms at the bottom of the market, if smaller firms are no more likely to disappear through bankruptcy or merger than larger ones, and if the resources of firms that fail are distributed among surviving firms independently of size, then expression (2) will approximately describe the size distribution of firms in an economy. Thus, if we transpose Ijiri and Simon's model to political competition, expression (2) should describe the relationship between the rank of a party (or a candidate, depending on the structure of the election) and the strength of its

support -- provided that assumptions equivalent to Ijiri and Simon's hold, such as that larger parties have no advantage over smaller ones in their ability to attract new voters, that all parties have the same likelihood of merging with someone else or of disappearing altogether, and that wholly new parties can freely enter the competition. Deviations from expression (2), then, would arise if any one of these assumptions is invalid -if something other than a wholly stochastic process describes the mechanism whereby parties grow, merge, dissolve, emerge -- or are otherwise credited with votes.

The argument Sobyanin and his colleagues offer is that expression (2) fails to describe Russia's electoral statistics because of the non-random element of fraud. In fact, the assertion that 9.2 million ballots were fraudulently added to the total is based on the assumption that the most serious deviations from a linear relationship can be attributed to fraud. This assertion, though, occasions three questions: (1) If we accept the hypothesis of fraud, does expression (2) allow us to estimate its magnitude; (2) were the deviations as pervasive as Sobyanin suggests; and (3) are there other reasonable explanations for deviations from expression (2)?

Turning to the first question, consider the following example with five candidates:

Candidate	Votes	Percent
A	155,00	42.2
B	114,00	31.1
C	43,000	11.7
D	31,000	8.5
E	24,000	6.5

Figure I graphs the log of vote against the log of rank, and reveals that instead of a linear relationship, there is a 'kink' in favor of the second ranked candidate. If we take this kink as an indication of fraud favoring candidate B, and if we want to estimate its magnitude -- to calculate the number of additional ballots marked to favor B -- Sobyanin suggests drawing a straight line between A and E and calculating the difference between B's predicted total and B's reported vote. In this example, B is 'too large' by approximately 45,000 votes, and thus this is the number of ballots assumed to have been added to B's total.

Ignoring the theoretical underpinnings of expression (2) for a moment, there are several practical problems that must be addressed. First, notice that our example is an especially easy one with which to work because B is the only apparent deviation from the straight line formed by parties A, C, D and E. But consider Figure 2, which portrays the outcome of Russia's most recent parliamentary elections (December 1995) for the ten largest parties. If, as with Figure 1, we assume that the true line occasioned by the random process that justifies expression (2) passes through the largest and smallest parties, we must conclude that all remaining parties except the pro-government Our Home Is Russia (NDP) lost votes through fraud. But even if we ignore the statistical issues that arise when trying to determine whether a 'deviation' is significant, there are at least four other possible calculations that Figure 2 allows. Specifically, rather than assume, a priori, that the 'true' line passes through the largest and smallest parties, we could assume instead that

- the true line should pass through the two largest parties (line 2), in which case we would infer that fraud benefitted everyone except the Communists (KPRF), Zhirinovsky's LDPR, and Women of Russia (WoR);
- the true line should pass through the six smallest parties (line 3), in which case we would infer that fraud benefitted the four largest parties;
- the true line is the one that statistically best fits the data (line 4) -- the line that minimizes the sum of squared distances between predicted and actual outcomes -- in which case we would infer that votes were stolen from Women of Russia and the LDPR and added to the Communists and Our Home Is Russia.
- the true line should ignore the parties that fail to secure parliamentary representation. Since only the four largest parties surpassed the 5% threshold, this line would look much like line 4 and again we would conclude that fraud benefited Our Home Is Russia.

Matters become more complicated still if fraud is sufficiently great so as to change the rank order of parties. Take the example from Figure I and suppose that 95,000 votes, and not merely 45,000, had been fraudulently added to B's total. In this case the graph of log(R) versus log(vote) is the one shown in Figure 3, so that now we would mistakenly conclude that it was party A and not B that had benefitted from the fraud.

It is evident, then, that until we make some additional assumptions we cannot infer much of anything from such an analysis. Specifically, we must know at least the following: (I) the true rank order of the parties; (2) the parties that did not benefit from fraud; and (3) the 'relevant' parties. Insofar as Russia is concerned, Sobyanin and his associates implicitly or explicitly supply us with the requisite assumptions: all electoral fraud in the 1993 Russian party-list Duma elections favored communists and nationalists, Russia's Choice ranked first in most regions, and all but the smallest two or three parties are relevant. In addition, neither Russia's Choice (RC) nor the Democratic Party of Russia (DPR) benefitted from fraud and thus, when applying expression (2), we should use these two parties to identify the 'true' relationship between log(R) and log(vote).[2]

Armed with these assumptions, consider Figure 4, which is constructed using officially reported national totals. However, rather than merely draw a straight line between 'RC' and 'DPR', we need to move 'RC' horizontally to the left and the LDPR horizontally to the right to accommodate the assumption that Russia's Choice actually ranked first. The resulting straight line suggests, then, that Zhirinovsky (LDPR) benefitted most from fraud, the Communists (KPRF) next, Yabloko third, and the Agrarians (APR) fourth. If we assume, moreover, that without fraud, the Communists would have ranked fourth, behind Women of Russia (WoR), and that the Agrarians would have ranked behind Yabloko, we would conclude that Zhirinovsky's vote was doubled by the addition of approximately 6 million fraudulent ballots, that the Communists gained 2 million votes, and that the Agrarians gained nearly 2 million -- for a total of

[2] We shall ignore the argument here that Russia's Choice had several million votes stolen from it and that the application of expression (2) requires an upwards adjustment in that party's vote.

approximately 10 million fraudulent ballots.[3]

The surprising thing here, then, is that this adaptation of the log-log model gives us approximately the same estimate of the magnitude of fraud as Sobyanin's initial back-of-the-envelope calculation.

But one important difficulty with this method is the ad hoc nature of the assumption that Zhirinovsky's LDPR was the primary beneficiary of fraud, with some added ballots going as well to communists and, to a lesser extent, Women of Russia and Shakrai. Even still, the application of this methodology leads to strange conclusions when we look at the 88 separate regions (oblasts and republics) that participated in the election.

- Russia's Choice officially ranked first in ten regions, with virtually perfect straight line fits describing three of them (Perm, Sverdlovsk, and the Taymyr Okrug), fraud indicated as favoring Zhirinovsky in five (Karelia, Nenets, Tomsk, Yaroslavsk, and Cheliabinsk), fraud indicated as favoring Zhirinovsky and Yablonko in St. Petersburg, and fraud indicated as working against Zhirinovsky in Moscow. Thus, we might ask: Why did fraud favor a Nazi extremist in those regions in which Russia's Choice was strongest?
- Shakrai's party ranked first in four regions (Gornii Altay, Buryatia, Tuva, and the Kabardin Republic), but unless we assume that votes were stolen in Buryatiya from Yablonko, we would infer that Zhirinovsky, Russia's Choice, Women of Russia, and the Communists all benefitted from fraud there, as well as in Gornyi Altay, whereas in Tuva, votes were stolen from Zhirinovsky or added to the totals reported for Shakrai's list.
- Fifty one of the remaining 74 regions give no evidence of fraud -- virtually straight lines describe the log-log relationship among the first six or seven ranked parties. Only by assuming that the LDPR or Communists actually ranked second can we infer fraud in any form, in which case, of course, it is not expression (2) that allows us to detect fraud, but our a priori assumptions.
- Twenty three regions do not fit expression (2), and there the evidence for fraud points in a variety of directions. We can infer fraud if we assume that Russia's Choice actually came in first in each of these regions, but in Primorskii, for example, we would at the same time infer that fraud helped both LDPR and Women of Russia and that Women of Russia benefitted from fraud in the Jewish Autonomous region, the Urdmurt republic, Yavalo-Nenets, Chabarovkii, and Archagenslkaya, but that votes were stolen from it in Murmansk.

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[3] This calculation gives a larger estimate of fraud than the one offered by Sobyanin and his colleagues. However, that estimate assumes that votes (approximately 2 million) were also stolen from Russia's Choice, in which case we should not only move Russia's Choice horizontally to the right, to first place, but also up, to accommodate the 'stolen' votes. Such a move has the effect of diminishing the vertical distance between the predicted line and the votes received by the Communists, LDPR, and Agrarians. Our reanalysis also fails to accommodate the possibility that the rank orders among other parties were changed by fraud.

Thus, instead of generating a coherent picture, the application of expression (2) to each region separately results is a range of conclusions. This, of course, can mean that different parties benefitted in different ways in different regions and rayons, depending on the sympathies of local and regional administrators. But if that is true, then before we can have any confidence in a region-by-region application of expression (2), we must also append some statistical model to it that allows us to accept or reject alternative hypotheses. Otherwise, stories as to why one pattern emerges in one region and not another amounts to little more than seeing dogs, cats, and cows in cloud formations.

3. Theoretical Causes of Deviations from Linearity

Because we must know several things a priori, including the true rank order of the relevant parties, the application of expression (2) to other elections cannot be an all-purpose methodology for detecting or measuring fraud. Also, the incoherent picture we see when we consider each of the 88 Russian regions that participated in the election tells us that a statistical structure needs to be developed so that we can say when a deviation is significant and whether one region is significantly different from another. If a stochastic model underlies expression (2), then before its application can be taken as a methodology for detecting fraud, we must use that model to derive statistics for our estimates. However, even if we do our statistical homework, and even if we believe that we can secure the a priori information necessary to apply this method, there is an additional difficulty. Specifically, there are good reasons for supposing that expression (2) applies only under very special circumstances and that a coherent pattern of deviations from it will emerge 'naturally', without fraud.

Looking again at the relationship between firm size and rank, we do not find a linear fit but instead a concave curve in which mid-sized firms are larger than predicted. In their analysis of this fact, Ijiri and Simon (1974) note that two things can explain this 'distortion' -- smaller firms that are more likely than larger ones to be absorbed by mergers and larger firms that hold an advantage when it comes to growing through mergers and acquisitions. Hence, if we move back to the political realm, Ijiri and Simon's analysis suggests that things other than fraud can move things away from a linear relationship -- the inherent advantages of larger parties to raise funds and advertise, voter unwillingness to support parties with little chance of winning seats, and the desire on the part of established politicians to be on the list of a viable party rather than on a list that has little chance of passing the 5% threshold for representation.

Ijiri and Simon's analysis is consistent with what we find in Russia. In virtually every region, the log graph of party strength and rank is concave if we include those parties that failed to surpass the 5% threshold. Such parties exhibit a sharp drop off in support so that all but the smallest ones lie above a straight line connecting the strongest and weakest parties. This fact is important. A considerable literature suggests that electoral systems exert systematic pressures on politicians (see, for example, Duverger 1954, Rae 1971, Lijphart 1984, Taagepera and Shugart 1989, Ordeshook and Shvetsova 1994), and that among these pressures is the disincentive to vote for uncompetitive parties in accordance with the election law's implied definition of 'uncompetitive'. Thus, although one might argue that Russia's early election returns were dictated largely by stochastic things in conformity with whatever stochastic model rationalizes expression (2), the concavity in the regional log-log graphs in Russia's first election suggests that those pressures have begun to operate even there.

Elections, moreover, are not markets, and electoral systems can exert systematic influences on the number and size of parties that need not generate even a simple concave relationship between rank and size. To see what we mean empirically, consider Figure 5, which graphs the log of party strength against the log of rank for four selected West German elections (1949, 1965, 1976, and 1987) -- a country with an electoral system that differs from Russia's only in some details (albeit important ones). Notice that a nearly linear relationship holds in 1949, but that by 1965 we can detect a step-function relationship in which the two strongest parties are approximately equal in strength, the third and fourth ranked parties are approximately equal, and the two smaller parties are decidedly weaker than the rest. This pattern maintains itself in 1976 and 1987 except that in '87, there are three parties at the second level. Thus, in West Germany at least, we need to assume either that the assumptions supporting expression (2) became less valid as the political system matured or that maturity led to greater fraud.

A similar patter holds in Israel, which also utilizes a single national district constituency for elections to its lower legislative chamber, the Knesset. An approximately linear relationship holds from 1949 until about 1965 (see Figures a and b for two selected years). But by 1969 (see Figure c) a stepped pattern emerges, and, as Figure d. shows, becomes wholly evident in 1984 (it is tempting, of course, to suggest that, in contrast to West Germany, the large number of parties at the second level is the consequence of an irrelevant threshold for representation). Perhaps as evidence, however, that things other than the long-term processes occasioned by election laws can shape this relationship, Figure 7 shows that the stepped relationship disappeared (at least temporarily) in 1992. Whatever the cause of this late change in Israel, we would infer that a simple linear relationship is more likely to hold in an emerging democracy than in an established one. There are good theoretical reasons for this inference. Specifically, suppose the following four conditions hold:

- the election concerns a single issue such as left-right or liberal conservative,
- alternative policies on this issue can be represented by a straight line, and each voter can be identified with a specific point on this line (the voter's ideal point),
- party platforms are also denoted by points on the issue, and voters vote for the party whose platform is closest to their ideal, and
- the election, as in Russia, Germany, and Israel, entails party-list voting and encourages more than two parties.

Under these assumptions, if there is a platform for each party such that no party prefers to change its platform unilaterally (the platforms are in equilibrium), then parties should spread out and pair up along the issue (see for example Shepsle and Cohen 1990 for a general survey of the literature). Pairing keeps a party from moving toward the center away from its twin: If it tries to move, it not only loses support to its twin, but it encourages the twin to follow it so as to eventually squeeze it out between the twin and the next adjacent party. The result, then, can be a reduction of the party's support below the representation threshold. Spreading out in pairs, on the other hand, reduces the chances that new entrants can find a niche with which to enter the political fray.

The existence of an equilibrium may be problematical and may be the consequence of things exogenous to our simple model (e.g., partisan loyalties and the informational limitations

of voters). It is also true that the number of parties that exist in equilibrium will depend on the details of the election law, the most important being the number of seats filled in each election district and the magnitude of any threshold that must be passed to secure representation. The relevant thing here, though, is that if voter ideal points on the issue are symmetrically and unimodally distributed about the median of the population, then the one or two parties at the median will get a slightly larger share of the votes than the rest, the four parties to the immediate right and left of center will all get the same vote, the four parties to their right and left will get the same slightly diminished share, and so on.[4] Thus, if we graph the strength of parties (or its log) against rank (or its log), we should see a step function rather than the straight line described by expression (2). In addition, if an electoral system such as Israel's encourages a great many parties, then it is reasonable to conjecture that the differences in the support received by each of the smaller parties will by barely if at all noticeable so as to produce the single step we observe in the Israeli data.

Of course, we can predict a stepped relationship only in equilibrium -- a circumstance unlikely to prevail in the early stages of party development. So we should not be surprised that it takes several elections before such a relationship becomes fully evident in West Germany. Nor should we be surprised that it takes longer for it to appear in Israel, since, with a virtually non-existent threshold for representation, its election law offers the greatest encouragement for the formation and maintenance of minor parties -- an encouragement that can only slow or even wholly disrupt the processes whereby party systems achieve equilibrium. Similarly, it is foolhardy to argue that Russia's infant party system is anywhere close to equilibrium -- 13 parties on the ballot in 1993 and 43 in 1995 hardly bespeaks of equilibrium. If we had confidence in the other ad hoc assumptions required to apply expression (2), an approximately linear relationship between rank and size might be a viable prediction for fraudulent free elections in Russia for the immediate future. But, as we note earlier, the sharp drop off in support received by the smallest parties signals the influence of at least one aspect of Russia's electoral law -- the 5% threshold for representation. More generally, though, our argument is that since we do not know all things that can lead a party system away from linearity, we must conclude that although fraud might have occasioned the deviations from linearity we observe in Russia, other things do so as well and we cannot exclude the possibility that these other things did not shape competition in even Russia's first democratic parliamentary election so as to vitiate the relevance of expression (2).

4. **Turnout and the Constitutional Referendum**

Although the initial estimate of the scale of electoral fraud rested on the application of expression (2), subsequent analyses (Sobyanin and Suchovolsky 1995, Myagkov and Sobyanin 1995) sought additional evidence from various patterns in the relationship between turnout and

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[4] Of Course, different patterns of support will appear, depending on the distribution of voter preferences. For example, if preferences are bimodally distributed, we can conjecture that the two or four strongest parties will get approximately equal shares of the vote. The precise relationship between election law, distribution of preferences, and support for parties by rank is an unexplored theoretical issue.

support for parties, candidates, and the constitution. And although searching for patterns that might be labeled 'anomalous' is difficult because Russia has never officially published district level electoral statistics for the December 1993 elections, Sobyanin has compiled rayon-level results for a subset of regions that encompass more than 800 rayons in 23 of 88 regions, and which account for 30.6 million votes, or approximately 28.8% of the electorate.[5]

In analyzing this and official regional data, we can begin with the argument that true turnout fell short of the 50% threshold required to render the constitutional referendum legitimate. An immediate difficulty here, though, is that individual regions appeared to behave no differently in December 1993 than in previous elections. Looking at turnout in the 1991 presidential election, the April 1993 referenda balloting, and the December 1993 Constitutional referendum, Table I shows that turnout varies significantly across and within regions in all three cases and that although turnout decreases over time, this decline is rather proportional across the country. There is a significant correlation by region from one election to the next -the correlation between turnout in April and December 1993 is 0.88, between 1991 and April 1993, 0.89, and between 1991 and December 1993, 0.84 -- so that, in addition to being able to make reasonably accurate predictions about relative regional turnout rates in December 1993 on the basis of turnout in either 1991 or April 1993, we can also predict that the December election would produce regions with low turnout (below 50 percent) as well as regions with high turnout (more then 70 percent). It follows that any assertion of uniformly low turnout requires rationalizing significant fraud in 1991 and April 1993 -- a less tenable assumption than that such fraud occurred primarily in December 1993 since it is only in this last election that regional political bosses had a clear incentive to pad the numbers in a particular way.

However, the argument for fraud is deeper than the observation that regions varied significantly in their reported turnout rates or that any increase in turnout above 50% is the consequence of added ballots. Focusing on rayon election returns and, first, on the constitutional referendum, Myagkov and Sobyanin (1995, but see also Sobyanin and Suchovolsky 1995) look at the relationship between turnout, T, and the product of T and the percent of the vote cast in favor of the Constitution, TxV_f. The variable $TxV_f = E_f$ is the percentage of eligible voters who voted in support of the Constitution, and at first glance it seems reasonable to suppose that any increase in T should generate an increase in E_f (as well as in E_a the percentage of the electorate voting against the constitution): Although additional voters might aid the opposition if a majority of them prefer the opposition, some non-zero percentage should hold the opposite preference so as to engender a positive correlation between T and E_f. However, if we look at the data for the 876 rayons in their data set with respect to the constitutional referendum we find little correlation between T and E_f (see Figure 8a), whereas if we look at T and E_a, we find a strong positive relationship (see Figure 8b). Myagkov and Sobyanin's (1995) inference is that the difference in patterns portrayed in Figures 9a and 9b is an anomaly that supports the hypothesis of electoral falsification in the form of added ballots marked against the constitution.

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[5] Although the data is unofficial and generated at the rayon level by aggregating data supplied by members of local electoral commissions, comparison of these data with official results reveals no significant discrepancies. That is, the reports of local officials and the Central Electoral Commission appear to be consistent.

There are, though, other explanations and other ways of looking at the data.[6] To begin with, notice that the rationale for supposing that T and E_r will be positively related consists of a comparison of the same voting district at two different point in time. If an election district at time t yields a turnout rate of $T(t)$ and support for f at $E_f(t')$, and if at some other time t' we find $T(t') > T(t)$, then it seems only reasonable to assume that $E_f(t')$ will be greater than $E_f(t)$. Although the increased turnout may have produced proportionately more voters who vote a, we would expect some of the additional turnout to contain voters who vote f. But this is not the comparison being made in Myagkov and Sobyanin's analysis. Instead, the comparison is among different districts at the same time. A weak or negative correlation between T and E_f might be deemed anomalous, then, only if we assume that our data is homogeneous -- that every observation is like any other except for the variables measured.

Homogeneity, though, is an assumption and not a fact, and it is, indeed, a critically important assumption. To see this, consider the example in Figure 9a, which portrays the relationship between turnout, T, and simply the percentage of the vote for and against some measure for four hypothetical voting districts. In this example we assume simply that the two higher turnout districts are more likely to oppose the measure being voted on, whereas support for the measure is strongest in the two low turnout districts. Thus, the correlation between T and V_a is positive whereas the correlation between T and V_f is simply the negative of the first correlation. Now consider Figure 9b, which graphs E_f and E_a against T. There are at least three things to note about the recalculated data here. First, the variance of the data corresponding to E_f is greater than the variance of the data corresponding to E_a. Second, and as a consequence of the first thing, the correlation between T and E_f is less than the correlation between T and E. In fact, if district 3 is not an individual district but, say, 100 districts, then the correlation between T and E_f is actually negative. Finally, notice that the data in Figure 9b is heteroskedastic (the variance increases with T), in which case using a simple linear model to estimate regression or correlation coefficients is problematical and can yield inappropriate inferences about the significance of coefficients.

To see that these problems are endemic to the method and not a mere consequence of our example, let the true relationship between the vote for or against a motion, V, and turnout be given by the expression

$$V = \alpha + \beta T$$

Hence,

$$E = \alpha + \beta T^2$$

and

$$\partial E/\partial T = \alpha + 2\beta T$$

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[6] We should also note hat if falsification is the consequence of opposition to reform and the desire of regional leaders to be elected to the Federation Council, we should anticipate finding stronger evidence of falsification in December 1993 than in, say, 1991. If fact, we find the opposite. Although the correlation between T and E_f is nearly zero (-0.12) in December 1993, the correlation in 1'991 between T and T times the vote for Yelstin is -0.19.

It follows from this expression that if α and β are both positive (e.g., if the vote against a motion increases with turnout), then $\partial E/\partial T$ is necessarily positive. On the other hand, if β is negative (e.g., if the vote for the motion decreases with turnout, as in the Russian case), then $\partial E/\partial T$ is positive only if T is less than $\alpha/2\beta$. The predicted relationship between T and E_f, then, is not linear or even positive and monotonic; instead, if turnout is sufficiently high for a sufficiently great number of observations, then a simple linear model would yield a negative estimate of the relationship between T and E_f, and a weaker relationship overall between T and E_f than between T and E_a.

One need not assume that a simple linear function such as expression (3) describes the relationship between V and T for problems to arise in the interpretation of the correlation (or its absence) between E_f and T. All we require is for V_f to bear some monotonic relationship to T. In this event, either V_f or V_a must bear a decreasing relationship, so that when we multiply the variable bearing the decreasing relationship and T (which is, of course, increasing with T), we open the door, as an artifact of simple algebra, to a non-monotonic relationship between T and either E_f or E_a. Whether non-monotonicity actually characterizes the data will depend on the range of values T assumes in the data and the strength of the relationship between T and V_a. That is,

- if T assumes only relatively low values such as is typical in most U.S. elections, the relationship between T and E_f as well as T and E_a, will be positive;
- if T assumes only high values, such as was the case in the most recent Quebec referendum on separatism, and if T and V_f bear a sufficiently strong (negative) relationship, then the correlation between T and E_f can be negative; and
- if T varies widely and if T and V_f, again bear a sufficiently strong (negative) relationship to each other, then the relationship between T and E_f will not be monotonic, and estimates of this relationship based on a simple linear model will be unreliable if not meaningless.

These possibilities are important for any conclusions we might offer about fraud in Russia's December 1993 elections. First, we see here that we should not anticipate the same relationship between E_f and T as we observe between E_a and T. In and of itself, the differences between Figures 8a and 8b hold no implications for fraud. Second, before deeming the relationship between E_f and T 'anomalous' we must first assess whether there are variables that intervene between the decision to vote and the choice of how to vote that might influence the relationship between T and V_f sufficiently to make the observed relationship between T and E_f dependent on the range of values T assumes in our data. Indeed, later we argue that some if not all of the 'anomalous' relationship between T and E_f can be explained by the fact that, at least for Russia, urban and rural voters appear to act somewhat differently in that urban voters are less likely to vote than are rural ones and rural ones are more likely to be conservative than urban voters. Finally, even if we conclude somehow that fraud accounts for some of the observed relationship between T and E_f, calculating its magnitude requires that we first subtract out the influence of any unobserved variables that establish a 'natural' relationship between T and V_f.

One might object, of course, with the argument that too strong a negative relationship between V_f and T is required to produce the zero correlation we observe between E_f and T. But here we can offer an indirect assessment of the likelihood that fraud and not some third variable

accounts for the observed relationship between T and E_f. Regardless of what we might think causes V_f and T to correlate 'naturally', we have little reason to believe that T and the share of invalid (blank or improperly marked) ballots should correlate significantly. And unless the fraudulent ballots cast by those who implemented fraud were otherwise invalid (blank or improperly marked), by artificially increasing turnout, fraudulent ballots cast against or in favor of the constitution should produce a negative correlation between T and $E_{invalid}$. However, if we look at the next-to-the-last column of Table II we see that such a correlation appears in only four of 23 regions, thereby seriously undermining the contention that fraud was extensive in a majority of regions.

There is, in fact, on additional reason to be suspicious of any inference of fraud from figures such as Figures 8a and 8b -- aggregation error. Although the rationale for predicting a positive correlation between T and E_f is based on a consideration of the likelihood of individual actions, Myagkov and Sobyanin's conclusions rest on data aggregated across the entire country. However, if the method is correct and if fraud in the form of ballots added to defeat the constitution is pervasive, we should find the same pattern within regions. However, looking again at Table II, we see that although only three regions in 1991 exhibited a positive correlation between T and T times support for Yeltsin, and although only ten regions did so in April 1993, T and E_f correlate positively in 20 out of 23 regions in December 1993.

These are not uniformly strong correlations (our preceding discussion suggests that they would not be strong owing to a true non-linear relationship), but they do suggest an interesting explanation for the zero aggregate correlation that corresponds to Figure 8b. To take an extreme possibility, suppose there are three regions and that each consists of three rayons. Suppose turnout in region l's rayons is 30, 35, and 40%, that it is 45, 50, and 55% in the three rayons of region 2, and that it is 60, 65, and 70% in region 3's three rayons. Finally, suppose support for the proposition in question, V_f, is 20, 15, and 10 in the first, second, and third regions respectively. Then a region-by-region graph of E_f against T would produce three positively sloping lines that, despite the perfect correlation within each region, would generate a zero aggregate correlation .

Something like this occurs in Russia. Looking at support for the constitution and excluding the 5 regions for which the correlation between T and E_f is negative or essentially zero, Figure 10a graphs the overall relationship between T and E_f across all rayons in the remaining 18 regions of our data. Notice that the cloud of data here is not much different than the cloud reported by Myagkov and Sobyanin (compare Figure 10a with Figure 9a). However, after disaggregating the data by region, Figure 10b graphs the best fit lines for the relationship between T and E_f for each of these 18 regions, and reveals a pattern not unlike our example -- a set of nearly parallel, positively sloping lines. Thus, although we cannot reject the hypothesis that a good many of these slopes are not significantly different from zero, it is the case that the 'anomaly' of a zero or negative overall correlation between T and T times support for the constitution is a consequence of different turnout rates across regions rather than of the absence of a within-region relationship between T and E_f.

We have, then, a simple explanation for what is offered as an 'anomaly' in the aggregate data that does not require any exceptional negative relationship between V_f and T. But there are still the five regions in which the correlation between T and E_f is negative or zero. One possibility, of course, is that such correlations are but the logical consequence of expression (3). That is,

recall that if the correlation between V_f and T is sufficiently negative owing to some third intervening variable (e.g., % urban), then if T is sufficiently high, the correlation between E_f and T will be negative as well. In fact, this is what we observe in the data. Specifically, as predicted by a fraud-free model, the correlation between average turnout in a region and the slope of the linear regression line between T in the region and E_f is negative -equals -.72. One might argue, of course, that turnout is greater in those regions in which the relationship between T and E_f is 'anomalous' (i.e., not strongly positive), but the point here is that if we take as our null model the hypothesis that the December 1993 election was relatively fraud free, or at least that ballots were not uniformly added to the total and cast against the constitution, then on the basis of the methodology offered, we cannot reject that hypothesis, nor can we use the method to measure the magnitude of fraud.[7]

This same argument applies, of course, to the analysis of party list voting in the December elections. But before we turn to those elections and before we consider more fully the possible influence of differences between urban and rural voters, we want to offer an additional hypothesis about why we might observe a zero or negative correlation between T and E_f -- a hypothesis that once again illustrates the importance of taking into account the rules under which elections are held. To begin, notice that, aside from the cost of voting, those who favored the constitution had a dominant strategy -- vote 'for' -- since a yes vote increased turnout so as to render the referendum legitimate and increased the likelihood of an overall affirmative vote. On the other hand, the decision for people opposed to the constitution is more complicated owing to the requirement that at least 50% of the eligible electorate vote. If such a person believes that the vote will be close and that turnout will exceed the legal threshold, then he or she should vote against the document. If such a voter believes that the vote will be close and that turnout will be near 50%, then voting against and abstaining may be equally good choices. And if this person believes that a clear majority of likely voters will support the constitution but that turnout will be near 50%, then the dominant choice is to abstain since voting only increases turnout and increases the likelihood that the Constitution is ratified.

Voters opposed to Yeltsin, then, can express their dissatisfaction in two ways -to vote against the constitution or to abstain, where the optimal choice depends on beliefs that could only be weakly supported by public opinion polls. For purposes of an example, consider an election with 9 voters, and suppose 4 supporters of the document abide by their dominant strategy and vote

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[7] One might object to the preceding discussion of aggregation error with the observation that the within-region correlations between T and E_f are not always significantly different from zero. But such an objection in effect takes the existence of fraud as the null model and thereby subverts the original purpose of the methodology -- to detect and measure fraud when we have no other definitive evidence of its existence. On the other hand, if the null hypothesis is that the election is fraud-free, then we should test whether negative relationships between T and E_f are significantly different from some positive number. However, since we do not know what that number is (barring a separate data base that tell us the true relationship between V_f and T) and thus, aside from issues of heteroskedasticity and the inappropriateness of a linear model, we cannot hypothesis test in this instance.

'for', opponents should prefer to coordinate their actions so that either all abstain or all vote 'against'. Thus, Yeltsin's opponents confront a coordination problem that, if there are several such districts, is likely to be solved one way in some districts, another way in other districts, and not at all in the remaining districts. The overall result, though, is a negative correlation between the vote and turnout, a zero correlation between support for the constitution and turnout times support for the constitution, and a positive correlation between opposition to the constitution and turnout times opposition.

5. **The Party List Elections**

Absent additional evidence, we cannot assert that the preceding theoretical argument accounts for the negative correlations between T and E_f we observe in the five regions of our sample. And although it is true that this argument should increase our awareness of the possibility that patterns in the data labeled anomalous may be little more than the logical consequence of the rules under which referenda are held, the difficulty with this argument in the present context is that it applies only to the December 1993 election, and then only to the constitutional referendum. What of the other contests on the ballot in December 1993? Here the evidence for fraud appears to be stronger, at least with respect to the party list balloting. First, consider again Table II, which in the fourth column shows by region the correlation between turnout, T, and E_{CAL} (= T times the percentage vote for Communists + Agrarians + LDPR); in the fifth column shows the correlation between T and E_{RC} (= T times the vote for Russia's Choice); and in the sixth column shows the correlation between T and E_O (= T times the vote for all nine remaining parties). These correlations more clearly and uniformly correspond to the pattern Sobyanin labels an anomaly -- significant positive correlations between T and E_{CAL} but near-zero or negative correlations between T and E_{RC} and between T and E_O.

Since Table II disaggregates the data by region, we cannot explain the absence of significant positive correlations in the third and fourth columns as the consequence of aggregating data across regions. Nor can we explain things by referring, as we did in the case of the constitutional referendum, to the different optimal strategies of opponents and supporters of reform -- all voters have as their dominant strategy the choice of voting for their most preferred party (adjusted for the likelihood that the party would surpass the 5% threshold for representation). Finally, notice that if we take these numbers and combine them with the results from the previous section concerning the constitutional referendum, we can infer a more believable scenario of fraud than even the one Sobyanin offers. Specifically, rather than assume that rayon officials opposed to reform, when adding votes to the Communist, Agrarian or LDPR party lists, added votes against the constitution, we can assume instead that they simply scattered votes between the 'for' and 'against' positions on the referendum so as to increase turnout and keep their overseers in the Kremlin satisfied.

However, we must still confront the methodological and theoretical issues occasioned by expression (3), which imply that it is incorrect to assume a priori that a zero or negative correlation is an anomaly. That such correlations can arise "naturally" as a consequence of the relationship between V and T is evident when we look at election returns from other countries. For example, higher turnout in Poland's 1990 elections aided the rightist Democratic Union (the correlation between vote for DU and turnout is + 0.48) but hurt the leftist Polish Peasants' Party (the correlation here is - 0.25). I n Ukraine's 1994 presidential election, the correlation between

T and T times the vote for Kravchuk was +0.74 whereas the correlation between T and T times support for Kuchma was -0.46. In Bulgaria's 1994 parliamentary elections, the correlations between T and T times support for the leftist People's Alliance and the dominant BSP coalition were positive, but the correlations for the three other parties receiving significant electoral support (Alliance of Democratic Forces, Bulgarian Business Block, and Democratic Alternative for the Republic) were either zero or negative.

Of course, one might argue that fraud was pervasive in Poland, Ukraine, and Bulgaria for the same reasons it was pervasive in Russia -- a poorly developed technology and administration for counting votes. But in the 1984 Canadian elections, provinces with the highest turnout yielded the weakest support for the Liberal Party (r = -0.50), so that the correlation between turnout and the percentage of the total number of eligible voters who supported the Liberal Party is zero. Indeed, Canada offers an especially salient example of a strong positive correlation between T and E_a but a negative correlation between T and its opposite, E_f. Taking the aggregate outcomes in the province's 125 election districts as our observations, Figures 11a and 11b graph turnout in Quebec's most recent (1995) separatist referendum against T times the vote for separation (E_f) and T times the vote against separation (E_a) respectively. Once again, the correlation between T and E_f is negative (-0.20) whereas the correlation between T and E_a is positive (+0.32). If we look again at Figure 11a we should also note that the range of turnout in the Canadian data is relatively high between 84 and 97%. That is, it is in exactly the range were we would most likely expect, on the basis of our discussion in the previous section of expression (3), to see a negative fraud-free relationship between T and E_f. Thus, if the relationship between T and E_{RC} is not anomalous in Canada (and elsewhere) we cannot assume a priori that it is anomalous in Russia.

However, accounting for such a relationship requires identifying a variable that intervenes between T and V_f so as to generate a negative correlation between T and V_f and a positive correlation between T and V_a. And here, as even Myagkov and Sobyanin (1995) suggest, urbanization appears to be such a variable for Russia.[8] The relevance of this variable in Russian voting patterns is suggested by several studies based on aggregate regional data, which suggest that support for reform is concentrated in urban areas, whereas rural regions are more likely to oppose reform (Slider, Gimpelson and Chugrov 1994). Moreover, turnout also correlates with urban-rural distinctions. Approximately 78 percent of respondents to a post election survey from rural areas claimed to have taken part in the December 1993 election whereas only 69 percent

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[8] In fact, to suppose otherwise is to suppose that Russia is somehow unique among post-communist states. the pattern of greater support for leftist or anti-reform parties in rural areas has been observed in the Czech and Slovak republics (Obrman 1992), in Bulgaria (Ashley 1990; Koulov 1995), in Romania (Shafir 1992), in Albania (Szajkowski 1992) and in Hungary (Keri and Levendel 1995). In Poland's 1993 elections we find a strong negative correlation (-0.68) between support for the pro-reform Democratic Union and percent of rural in a province. Moreover, both turnout and support for conservative parties is reported to be higher in rural areas in Bulgaria (Krause 1995), Latvia (Bungs 1994), Slovakia (Fisher 1995), and Hungary (Oltav 1995).

from cities with populations under 100,000 claim to have done so (Wyman et al 1994, 1995). Although this study, like most polls elsewhere, overestimates overall turnout, this pattern is reflected in the within-region data. For all three elections (see Table III), there is a significant correlation between turnout and the percent of the population in a rayon classified as rural (with the exception of Murmansk, where cities are populated largely by career military). At the same time, Table III reveals a negative correlation between the vote for Yeltsin and the percent of rural population in all regions in 1991, in twelve regions in April 1993, and in all but one region in December 1993 (Sakhalin).

Although Myagkov and Sobyanin (1995) briefly consider the urban-rural distinction as an alternative explanation for the correlational patterns they label 'anomalous,' the relevance of this distinction goes beyond what even they or our discussion of expression (3) suggest. Specifically, in addition to opening the door to a 'natural' negative correlation between T and E_{RC}, it once again raises the issue of aggregation error. To see what we mean, consider Figure 12. Here, taking each rayon as an observation, we graph T versus E_{RC} (= T times the vote for Russia's Choice) in one particular region -- Krasnoyarsk. However, in this figure we denote those rayons with 10% or more rural population as rural or non-urban (labeled 'r') and those with less as urban (labeled 'u'). Figure 12 also graphs the best fit lines for those rayons labeled urban, for those labeled rural, and for the region taken as a whole. Notice once again the consequence of aggregation -- in this case across both types of rayons: although the correlation between T and E_{RC} is positive for urban rayons and only slightly negative for the rest, it is more strongly negative when we combine these two populations.

This consequence of aggregating across rayons that vary by percent urban accounts, in fact, for a good part of the 'anomalous' character of the data that Table II reports. Specifically, consider Table IV, which gives the overall correlation between T and E_{RC} as well as the correlation among rayons classified as urban and non-urban. The extreme possibility is illustrated, now, by Archangelk oblast, which produces a positive correlation in both urban and non-urban rayons, but which generates a negative correlation overall. More generally, however, notice that, excluding the four regions with too few urban observations, the overall correlation is less (more negative) than both the urban and non-urban correlations in 18 of the 19 remaining regions. Thus, we can attribute some part of the negative correlation between T and E_{RC} in all but one of 19 regions to the aggregation of urban and non-urban rayons.

Admittedly, the consequences of aggregation are less pronounced here than with the constitutional referendum. But Table IV does point to an inherent problem with attempting to infer anything from such correlations. Applying this method necessarily entails aggregation of some sort since we must compare turnout across different populations -- regions, rayons, precincts, or whatever. Thus, aggregation error and the influence of intervening variables such as urbanization can never be excluded as a potential explanation for whatever pattern we find. Indeed, it is not only that a negative correlation can arise from aggregation, by a positive one can arise as well. If there are three regions with three rayons, and if turnout rates in the first, second, and third rayons in each region are 20, 30, and 40% in region 1, 30, 40, and 50% in region 2, and 40, 50, and 60% in region 3, and if because of fraud or because of some additional aggregation issue, the correlation between T and E_f is zero in all three regions, but if E_f is .1 in region 1, .2 in region 2, and .3 in region 3, then when we aggregate across regions, we would find a positive correlation overall. And because the proposed methodology for detecting fraud

requires aggregation, the possible existence of other intervening variables implies that we can infer little if anything a priori from a positive or negative correlation between T and E_f. It is not, as Myagkov and Sobyanin (1995) argue, that a negative correlation is an anomaly that, although consistent with other hypotheses, is suggestive of massive fraud. Both positive and negative correlations are consistent all of the alternative hypotheses, so that no inference can be drawn from such correlations.

6. **Some Notes of Caution**

It remains true, of course, that the correlations reported in the second column of numbers in Table IV are nearly uniformly negative or insignificant so that, despite our arguments about aggregation error and the consequences of simple algebra, we cannot preclude the possibility that fraud is present. Here, though, we want to offer some notes of caution about alternative interpretations of the data. The first note concerns the magnitude of the fraud required to engender the correlations we do observe. Suppose, as Myagkov and Sobyanin suggest, that fraud is concentrated in rural rayons, and for purposes of an example, consider Krasnoyarsk kray again, along with Figure 12. Aside from the nearly uniformly higher turnout of rural rayons and the nearly uniformly lower support for Russia's Choice, notice that if turnout is artificially increased within a rayon as in our example, and if votes are given only to Communists, Agrarians, or the LDPR, then the observation for that rayon moves only horizontally to the right. Thus, if we assume that the true correlation between T and E_{RC} is of some "reasonable" order of magnitude (say 0.50), then from this construction we can estimate the share of false ballots that must be added to the total of each rural rayon in order to produce the data shown in Figure 12. In this instance, in order to secure a correlation around 0.50 and generate 'true' data like that shown in Figure 13, we must assume that approximately half the ballots cast in each rural rayon were fraud (or, equivalently, that the true turnout in rural rayons was half the level officially reported).

If we assume that some percentage of false ballots were cast also in urban rayons, then the percentage of false ballots in the rural rayons must be greater still. But even numbers like 50% and higher begin to strain credulity. This is especially so since to argue that the true relationship between T and E_{RC} was positive and that true turnout in rural regions was lower than in urban areas stands in sharp contrast to the records of all other Russian elections, including the December 1995 ones. In all those elections, rural citizens again are officially reported to have voted with greater frequency that urban ones.

Our second note of caution once again concerns invalid ballots. Earlier, when discussing the constitutional referendum, we note that it seems unreasonable to suppose that those who perpetrated fraud by adding their own ballots to the total so as to increase overall turnout did so by adding invalid ballots. If this argument is correct, then it is doubly so when it comes to the party lists since here the logroll referred to in our introduction requires more than a mere increase in turnout -- it requires that the added ballots be cast in a particular way, for communists and Zhirinovsky's LDPR. So once again, if fraud in the form of added ballots is extensive, we should predict a negative correlation between T and $E_{invalid}$ when looking at voting for party list. However, as the last column of Table II shows, we find such a correlation in only five of 23 regions. In fact, when looking across all the correlations this table reports, we find that the methodology offered by Myagkov and Sobyanin (1995) allows us to make a strong case for fraud in only 4 or 5 regions -- Kirov, Kursk, Novgorod, and Tver oblasts, and perhaps Tula oblast.

Our third note of caution requires looking at our urban-rural analysis a bit differently and in a way the holds implications for the Federation Council elections. Consider Table V, which again classifies a rayon as non-urban if 10% or more of its population is rural and urban otherwise and which gives the average turnout figures in December 1993 for 'non-urban' and 'urban' rayons in each of the 23 regions in our sample. Table V also gives the average vote for Russia's Choice in these same rayons, as well as the difference in Russia's Choice's support. Note in particular that in every region, non-urban turnout is greater than urban turnout, and in every region, support for Russia's Choice is greater in urban rayons than elsewhere.

The consistency of these differences poses a problem for arguments about the ultimate motivation for fraud in 1993 -- namely, ensuring the election of regional bosses to the Federation Council. Specifically, those bosses did not run in every region and did not uniformly win in those regions in which they did run. However, as Table VII shows, the pattern of correlation between the turnout and the turnout times the vote for the Constitution, for Russia's Choice, and for Yabloko is the same in all regions. Moreover, all regions exhibit the same pattern in the relationship of urban-rural, support for Russia's Choice, and turnout. Hence, a more consistent explanation for the absence of a correlation between T and T times support for some indicator of support for reform is that it is a consequence of the correlation between the relative conservatism of rural districts and turnout in those districts.

Moreover, when we turn to the Federation Council elections, we find no consistent pattern in the relationship of T and T times support for regional leaders. Table VIII gives the correlations between turnout and the vote for the first, second and third-ranked candidates for the Council. If the primary motive for fraud was ensuring the election of regional bosses and their associates, the pattern we would predict is that the correlations between T and the vote for regional bosses would be uniformly strongly positive and that other candidates would suffer from this increased turnout. However, although such expectations are met in 9 of 15 regions in which local bosses won election to the Council, it is also the case that in 5 of those 9 regions, higher turnout is positively associated with a higher vote for their opponents. And in six regions, the correlation between the vote for local bosses and turnout is either negative or nearly zero.

7. **Conclusions**

It is at this point, of course, that we might want to rely on a more careful classification of regions, such as trying to identify those in which regional bosses were most likely to encourage fraud and those in which elections were allowed to be free and fair. For example, is the former Governor of Sverdlovsk in a position to manipulate the vote count -- thereby rendering this observation one that inconsistent with the maintained hypothesis of fraud -- or should we classify Sverdlovsk as a region in which the regional boss did not run? That is, is the ex-Governor of this oblast different from the former head of Briansk, where we do observe correlations that Myagkov and Sobyanin label anomalous?

Regardless of how we approach the data on the Federation Council elections, there are two views one can take of the effort to identify irregularities in Russia's aggregate electoral data. One view takes irregularities as merely an indication of potential fraud that must be explored by other means before definitive conclusions can be reached. The second assumes that irregularities can be identified and quantified with sufficient precision so as to allow for the calculation of the extent and form of fraud. Although our analysis does not necessarily undermine the first view,

it finds the second indefensible, at least with respect to the two methodologies used to argue for the existence of pervasive fraud in Russia's December 1993 elections.

First, although it likely that a stochastic model of voting and party competition can be developed that parallels Ijiri and Simon's (1974) theoretical analysis of firm size and that predicts a linear relationship between party rank and party support in accordance with expression (2), fraud is only one potential cause of deviations from such a prediction. As the data from West Germany and Israel suggest, the electoral system itself establishes incentives among candidates and voters that move a system away from linearity. Moreover, even if we accept the argument that expression (2) applies only to newly emerging democracies -- to political systems "out of equilibrium" -- the application of this expression requires a number of ad hoc assumptions that need independent validation. In this respect, perhaps the most critical assumption is that we must know whether fraud was extensive enough to alter the rank order of the parties and we must know the pre-fraud order. I f expression (2) can be used at all, it can be used only after these things are established, which, of course, defeats the original purpose of its application.

The second methodology -- examining the correlation between turnout and turnout times support for one position or another -- is also fraught with methodological pitfalls, the most notable being that a negative or insignificant correlation can characterize honest as well as fraudulent elections. A negative or insignificant correlation can be a consequence not only of the way we aggregate our data, but also of the existence of an intervening variable that establishes a connection between T and V. Once again, such a methodology might prove useful, but only if we can preclude the existence of confounding things such as a correlation between preferences and some exogenous variable like percent rural or if we can somehow subtract the influence of such variables. In the Russian case at least there appears to be a strong enough correlation among percent rural, conservative preferences, and turnout that any estimate of the magnitude of fraud that overlooks such correlations is likely to seriously overestimate that magnitude.

Finally, we reiterate that we are not arguing that Russia's elections did not place without significant fraud. Our arguments are intended primarily as notes of caution about using aggregate to quantify the magnitude of fraud. It should also be emphasized that we cannot apply the proposed methods by setting our null hypothesis equal to the proposition that there was fraud. Since, as we have tried to show, almost any pattern in the data is consistent with fraudulent as well as fraud-free elections, doing so defeats the purpose of the proposed methodologies -- detecting fraud when we are not certain it exists or are uncertain about its magnitude. And these are important methodological issues. Serious allegations have been made with respect to Russia's most recent elections (December 1995) -- allegations that might be used to justify canceling future elections or to proclaim the new Duma illegitimate. We can only urge that additional data be used directly to validate, invalidate, or refine the methodologies we question here.

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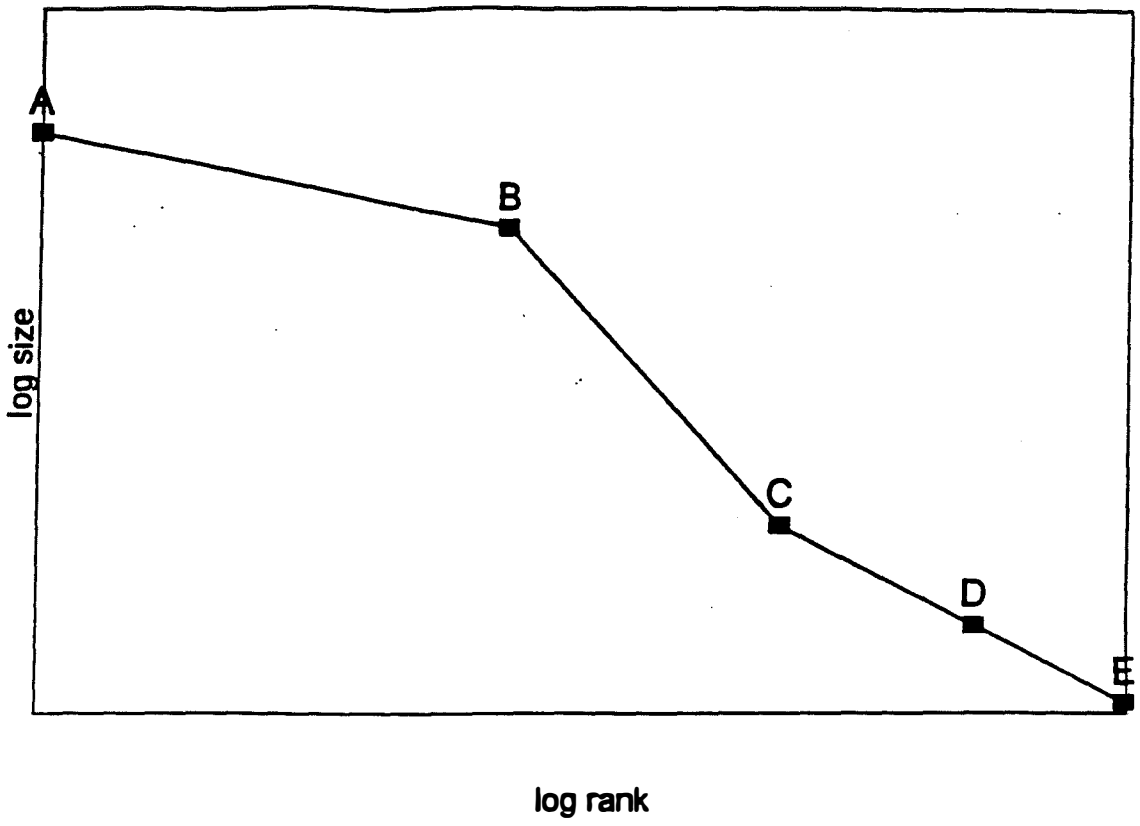


Figure 1: Sobyanin's Example

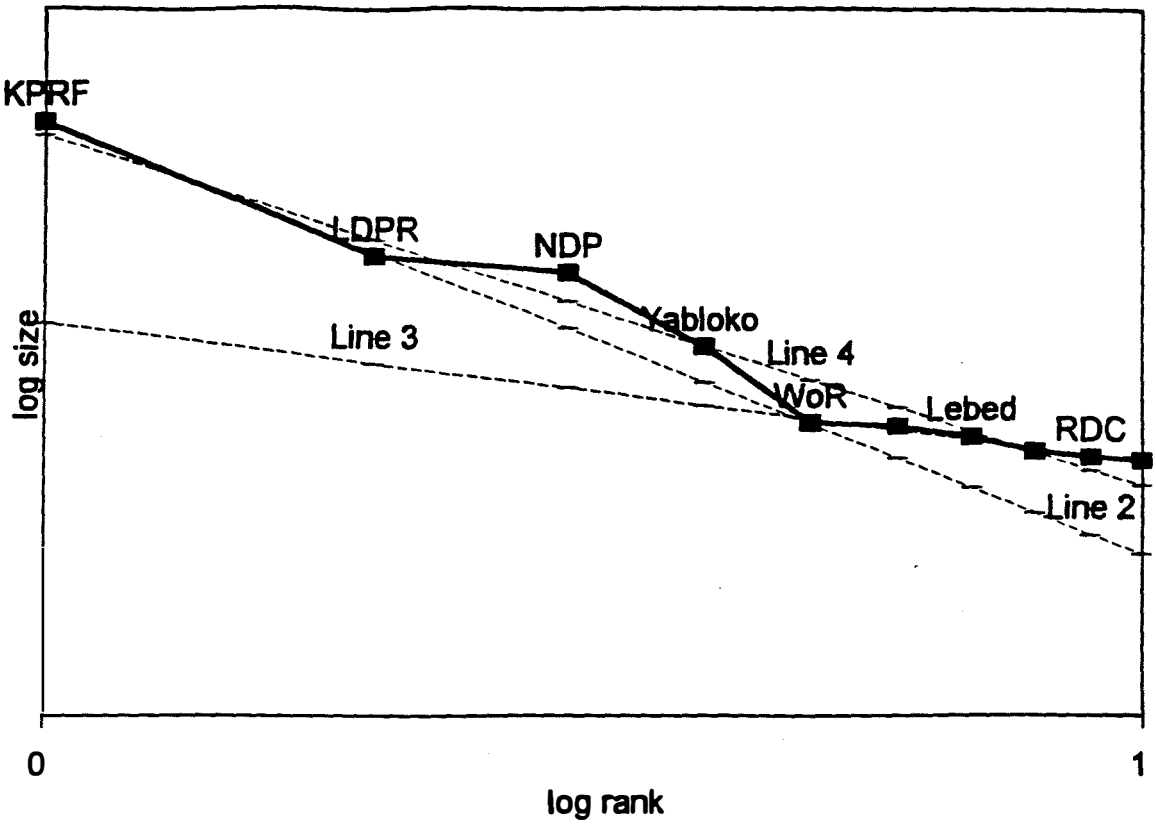


Figure 2 : Russia 1995

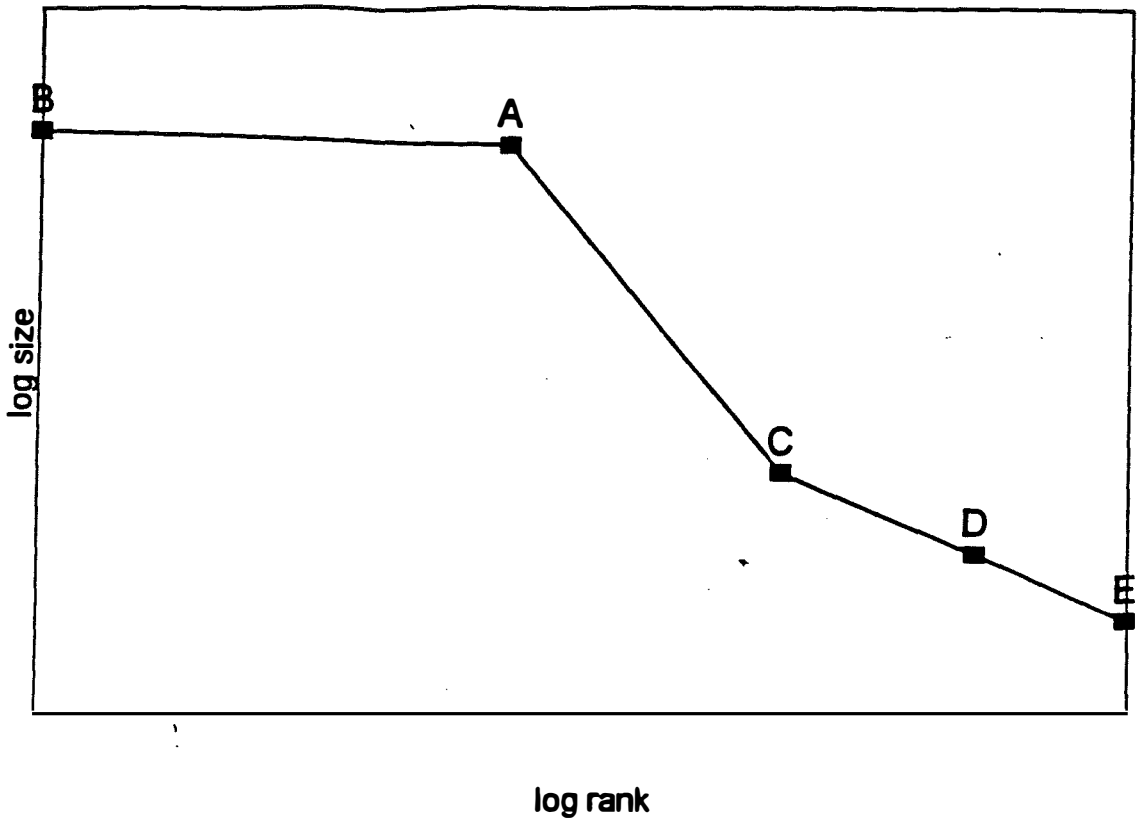


Figure 3: Modified Sobyanin's Example

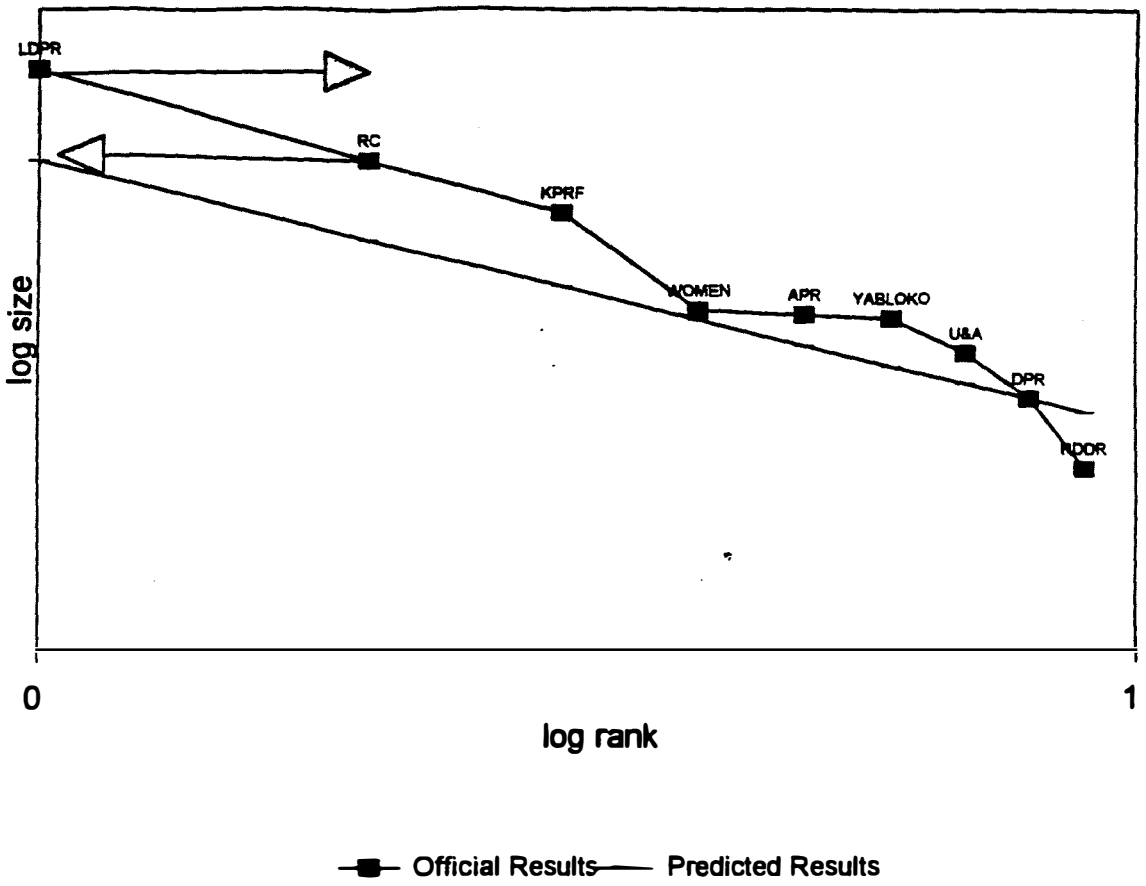
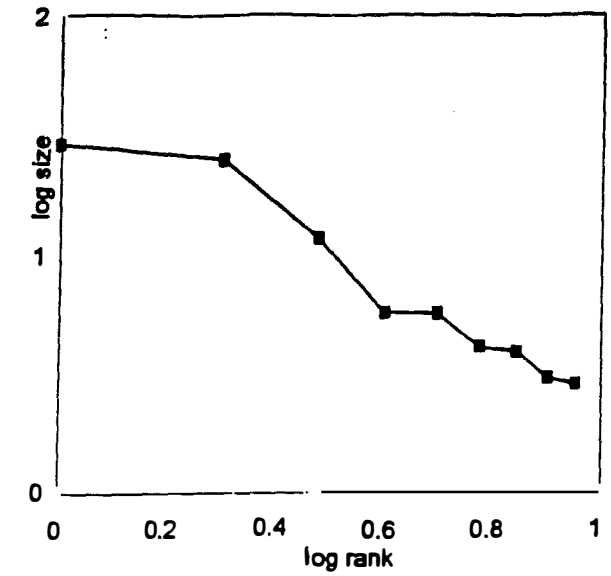
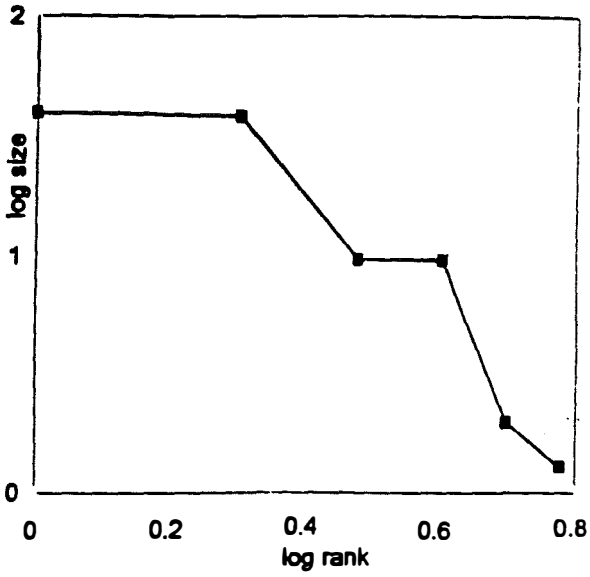


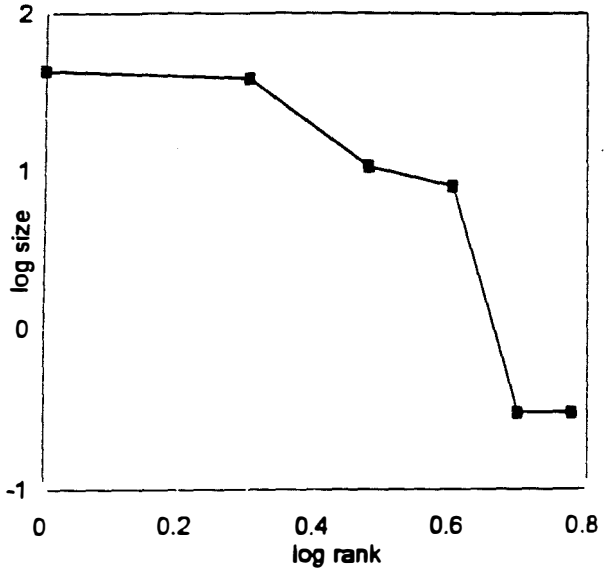
Figure 4: Russia 1993 - Official and Predicted Results



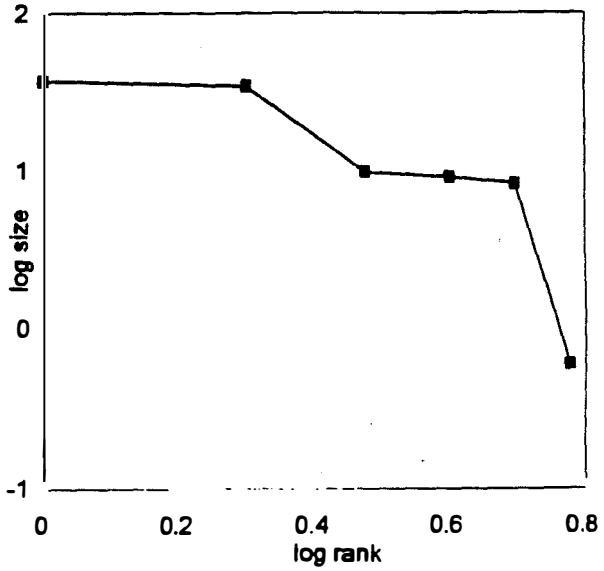
A: 1949



B: 1965

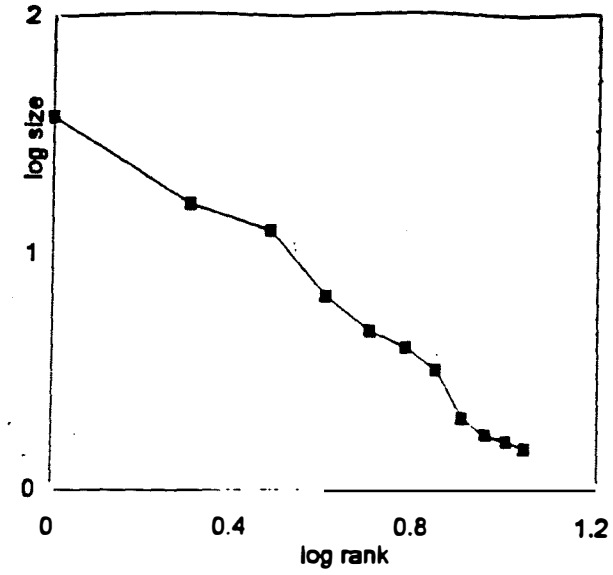


C: 1976

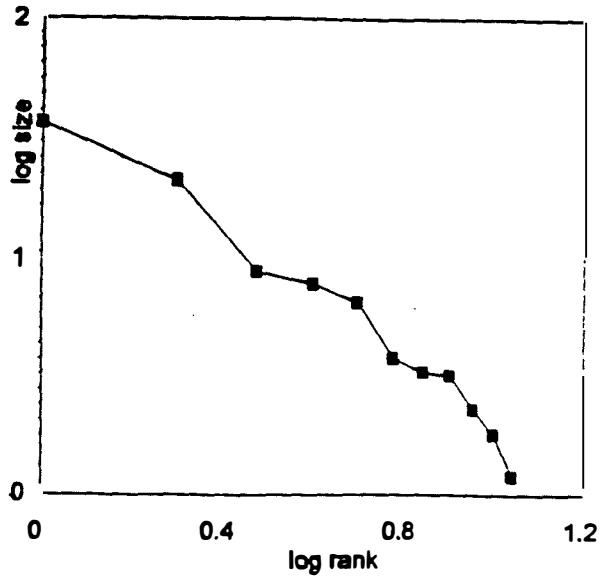


D: 1987

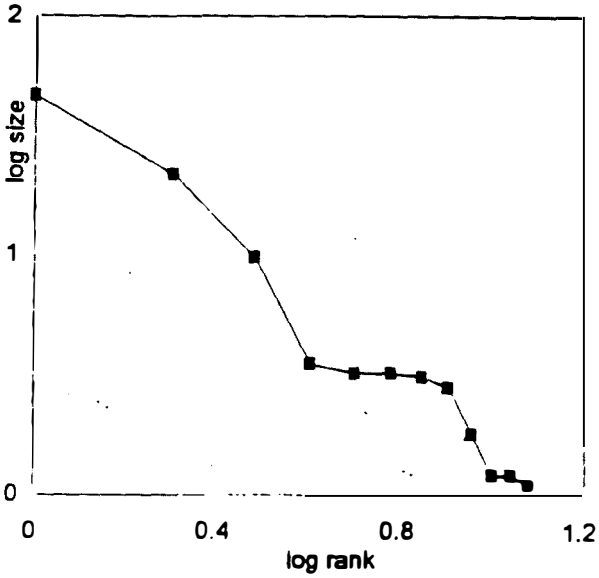
Figure 5 West Germany Elections



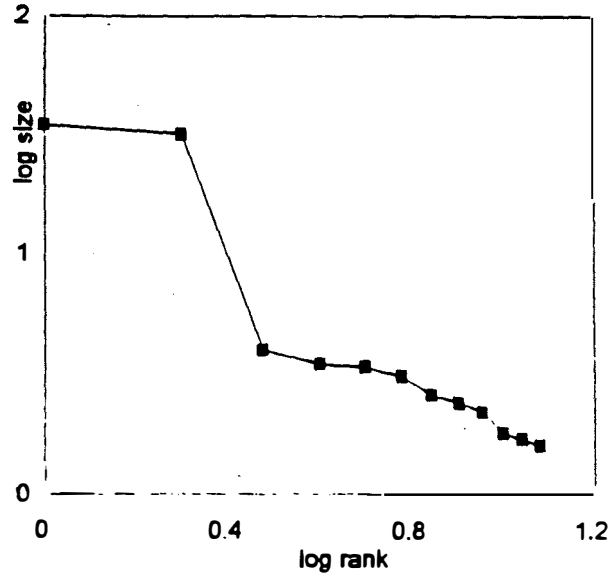
A: 1951



B: 1965



C: 1969



D: 1984

Figure 6: Israeli Elections

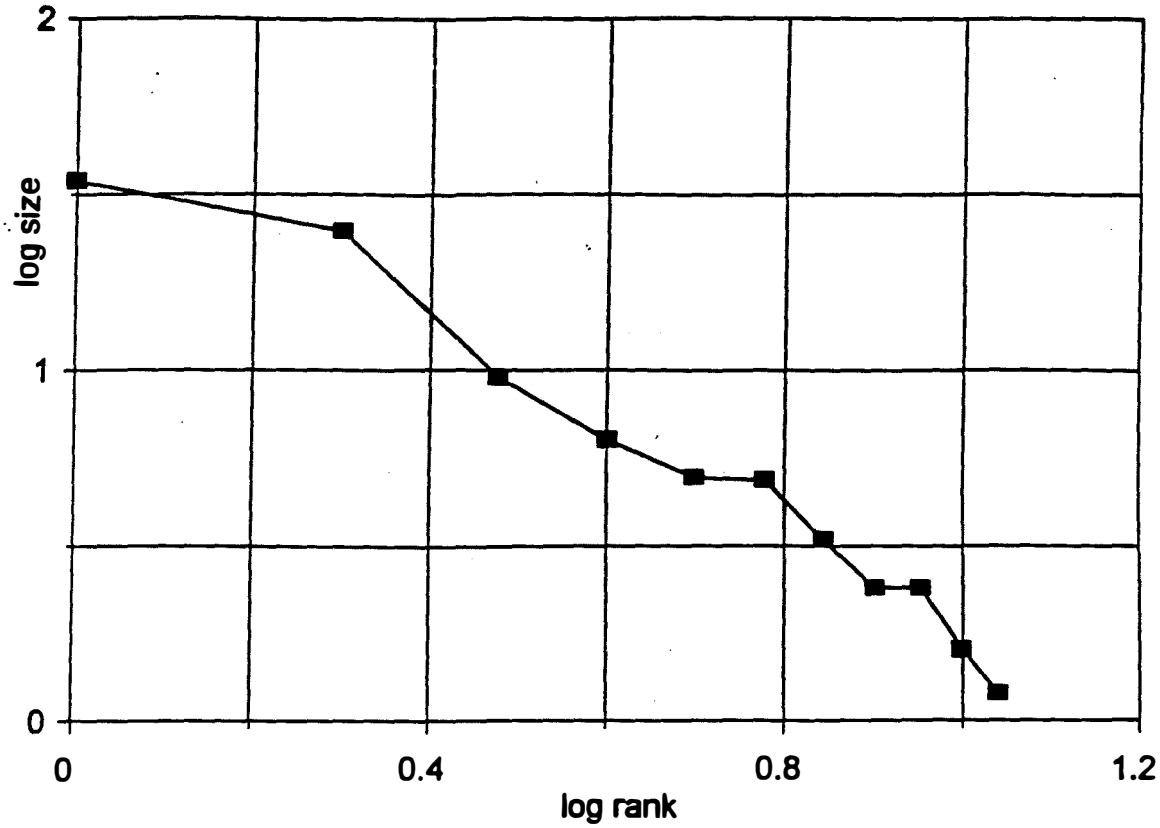


Figure 7: Israeli Elections 1992

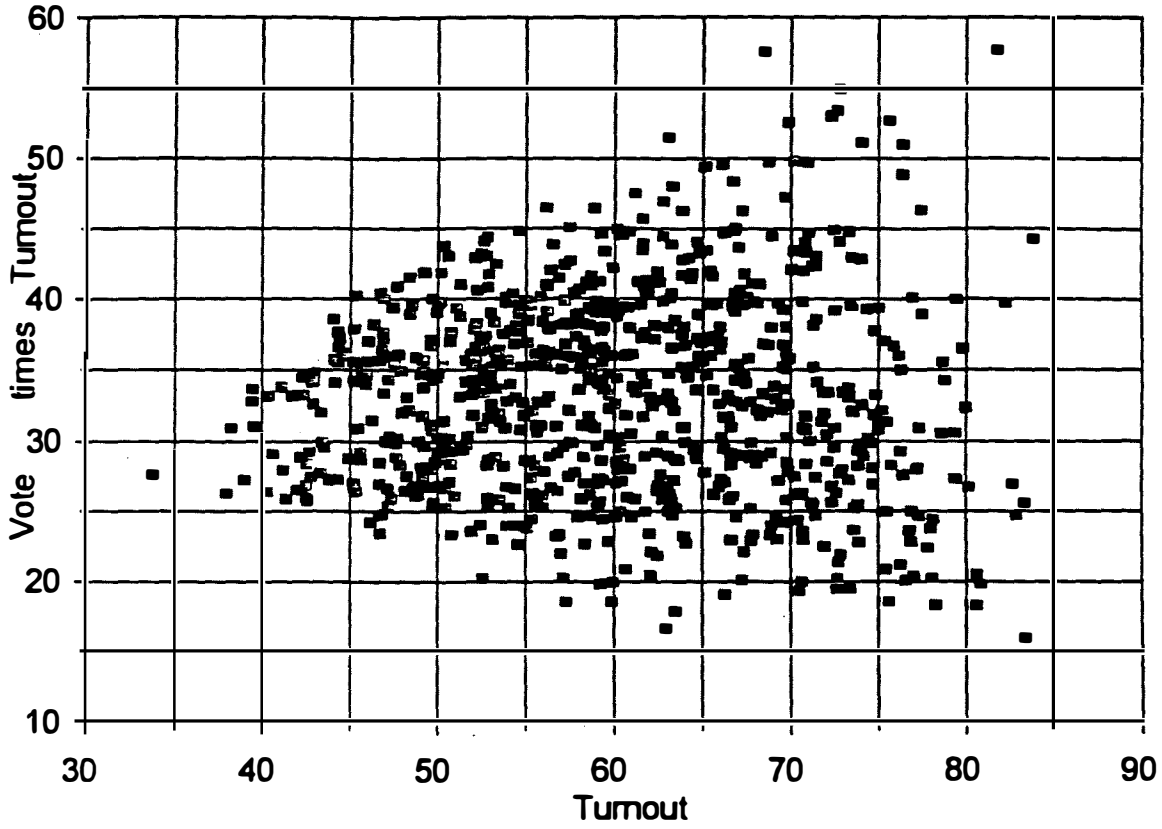


Figure 8a: Turnout and Vote "For" Constitution times Turnout for 23 Regions, 876 rayons

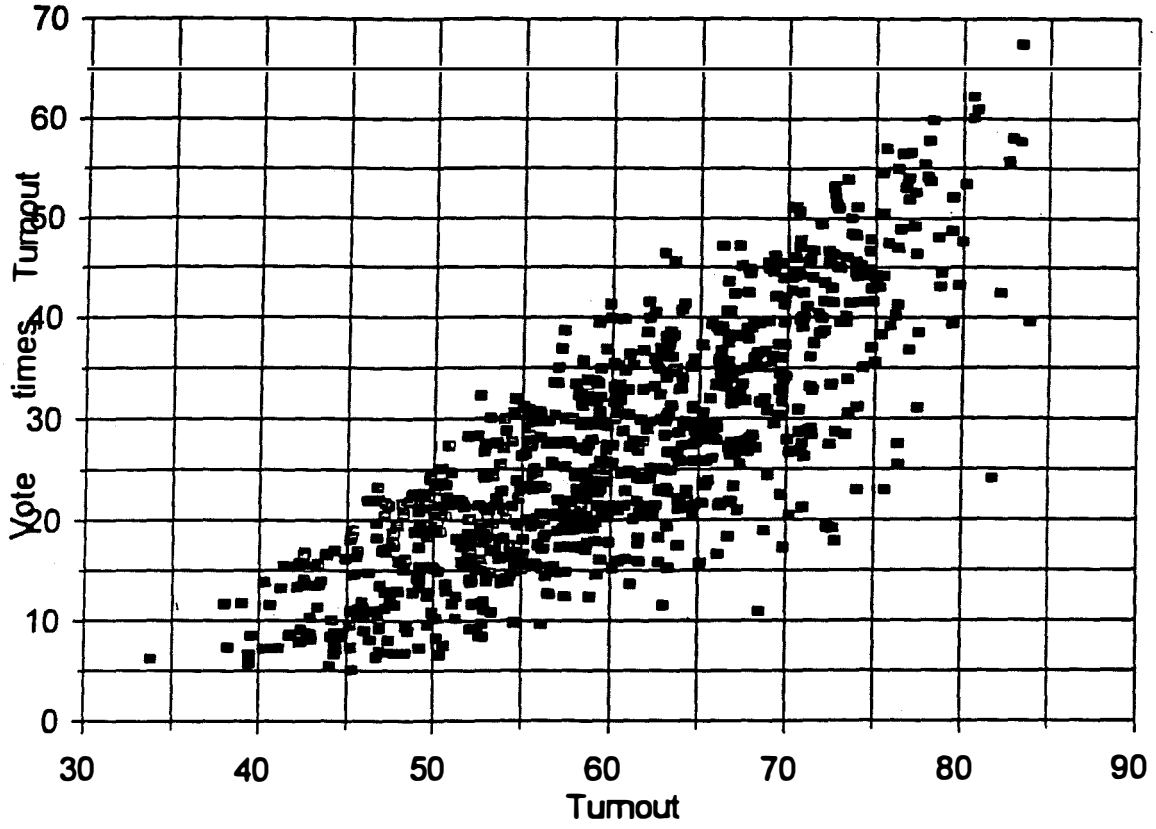
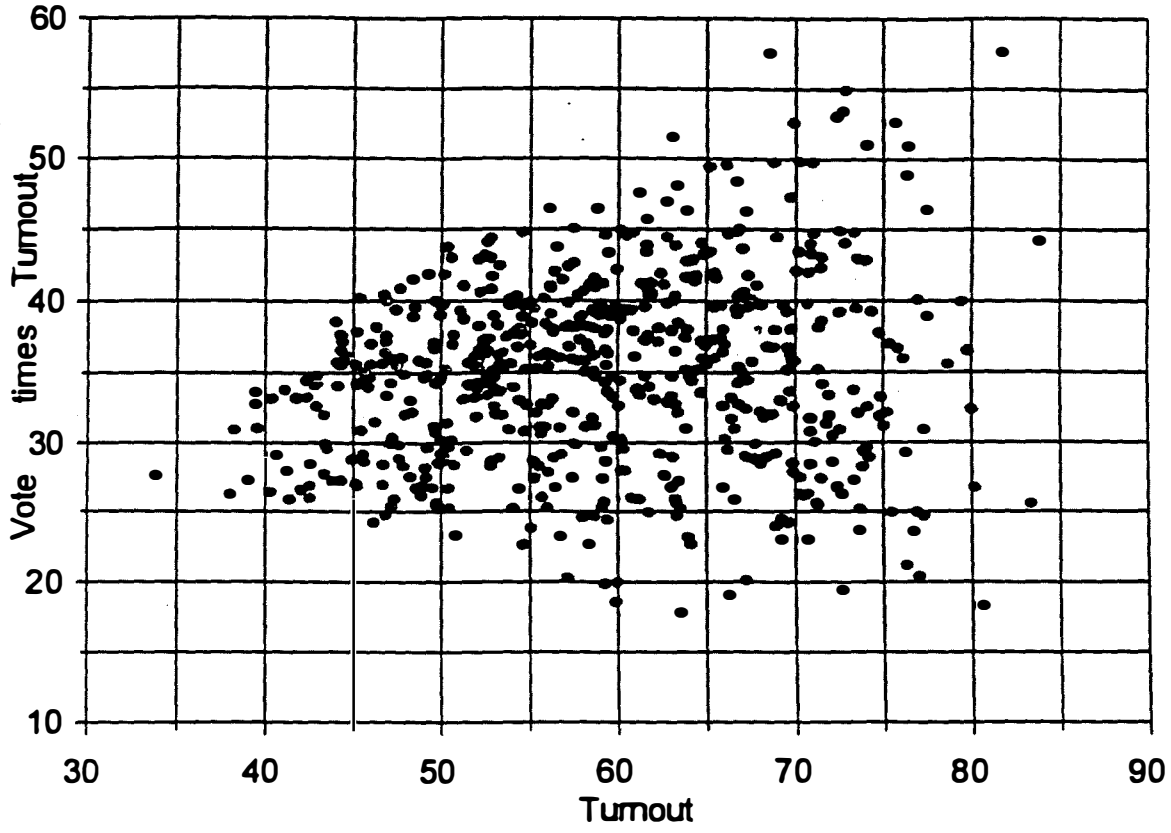


Figure 8b: Turnout and Vote "Against" Constitution times Turnout for 23 Regions, 876 rayons



Figuer 10 a: Turnout and Vote "For" Constitution times Turnout for Selected 18 Regions

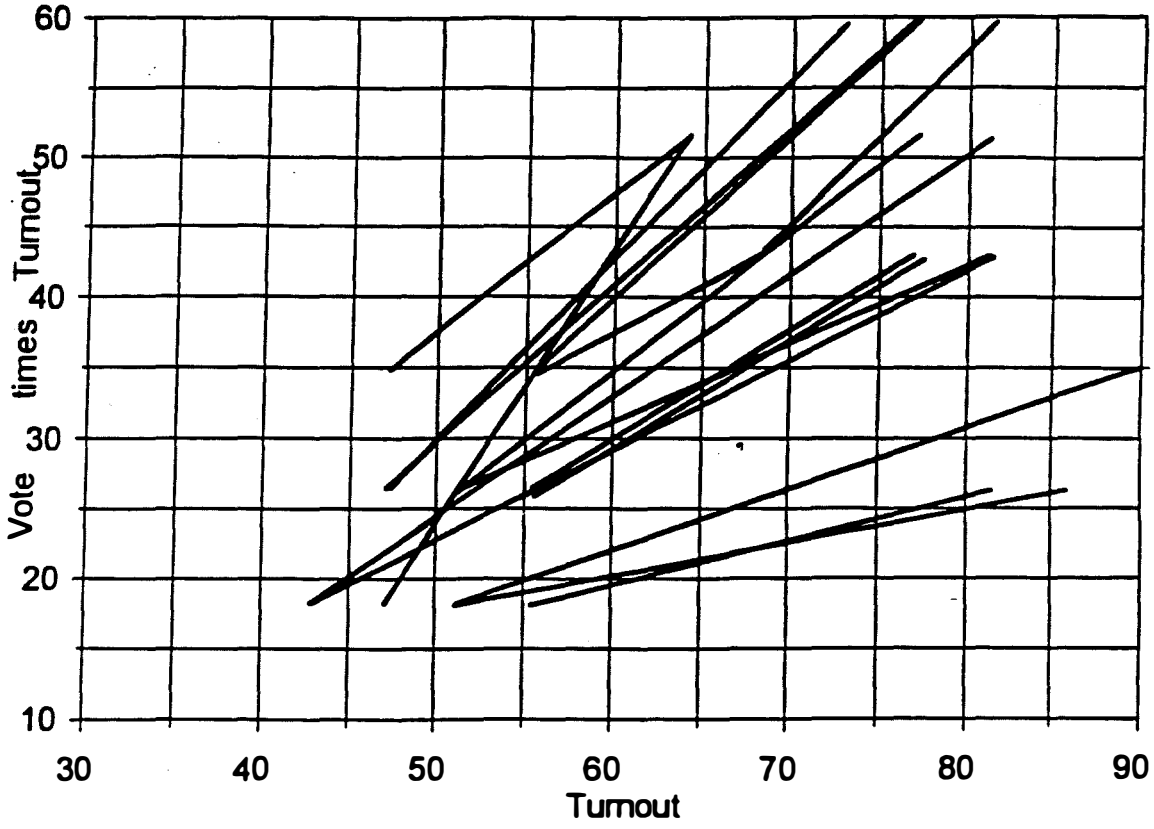


Figure 10 b: Regression Lines for Selected 18 Regions

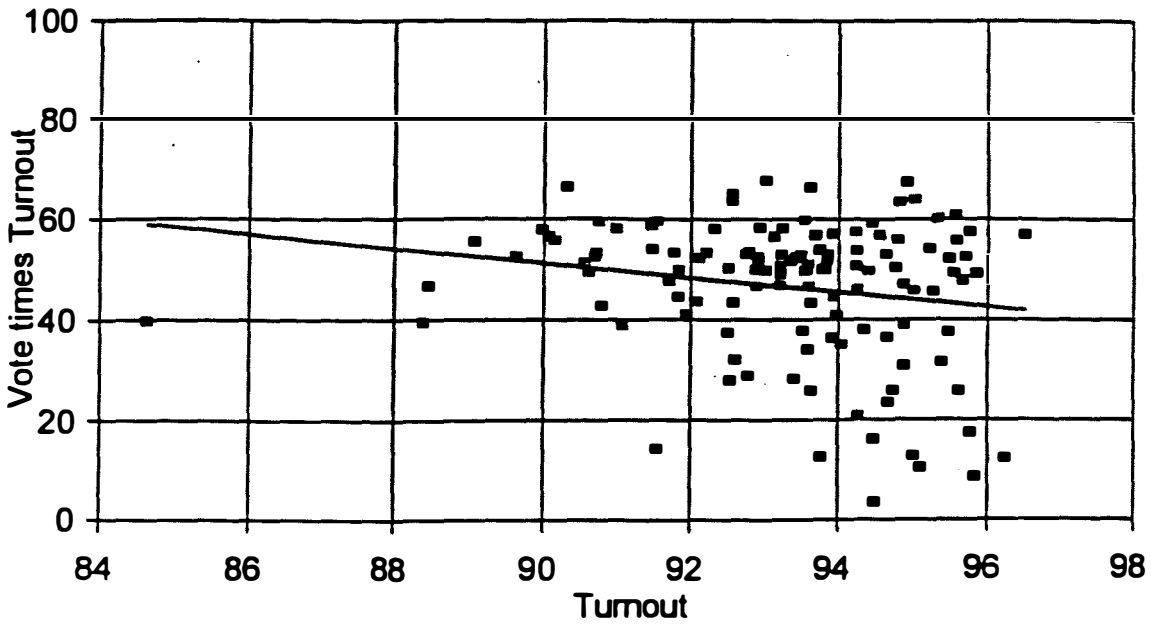


Figure 11 a: Quebec Referndum 1995, Vote "Yes"

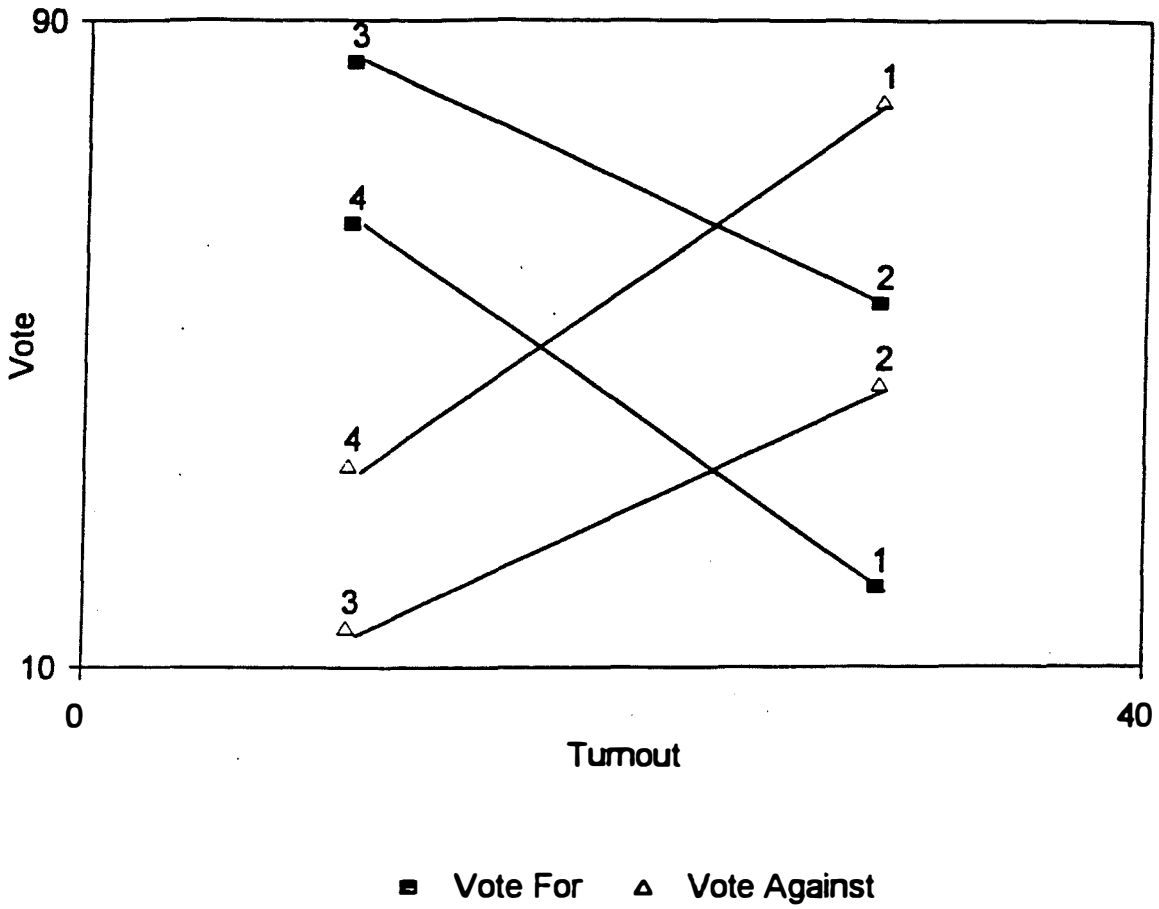


Figure 9a: Vote vs Turnout in numerical example

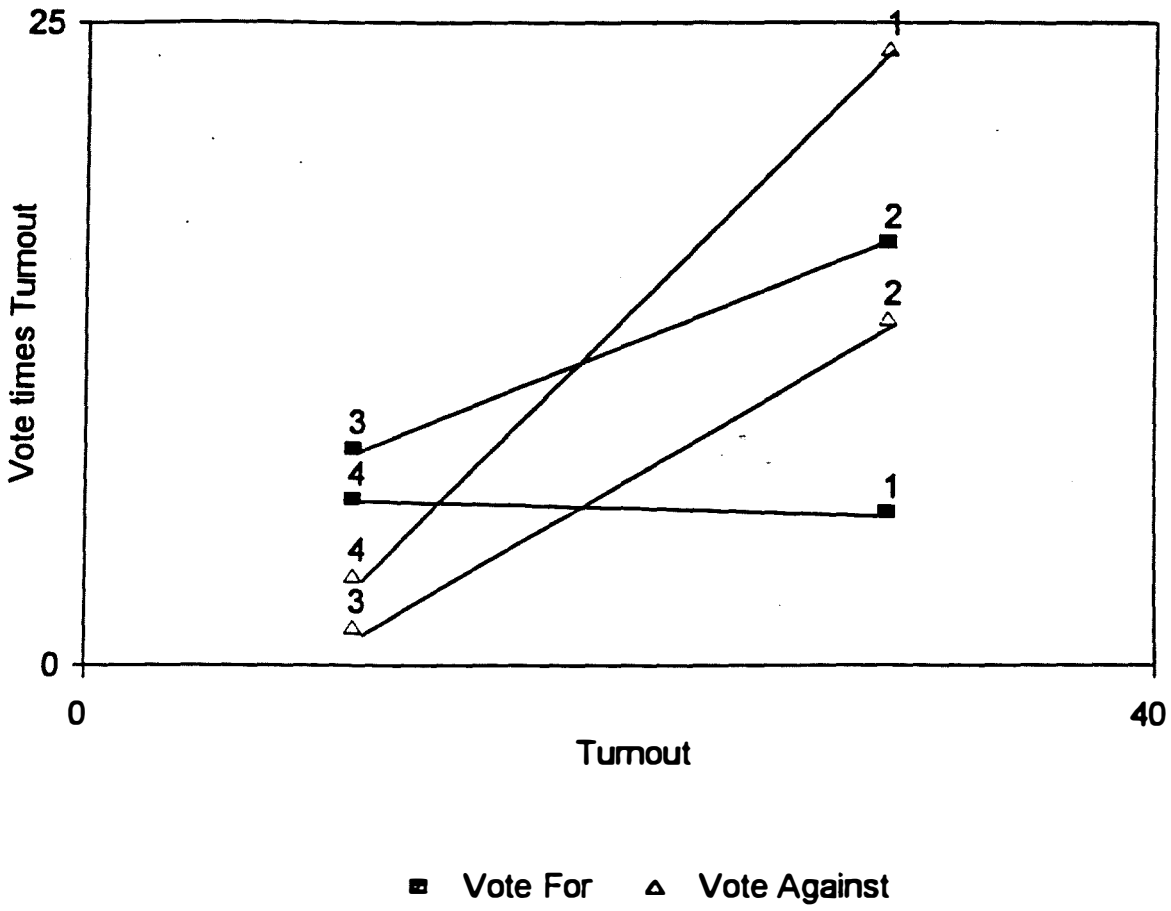


Figure 9b: Vote times Turnout vs Turnout in numerical example

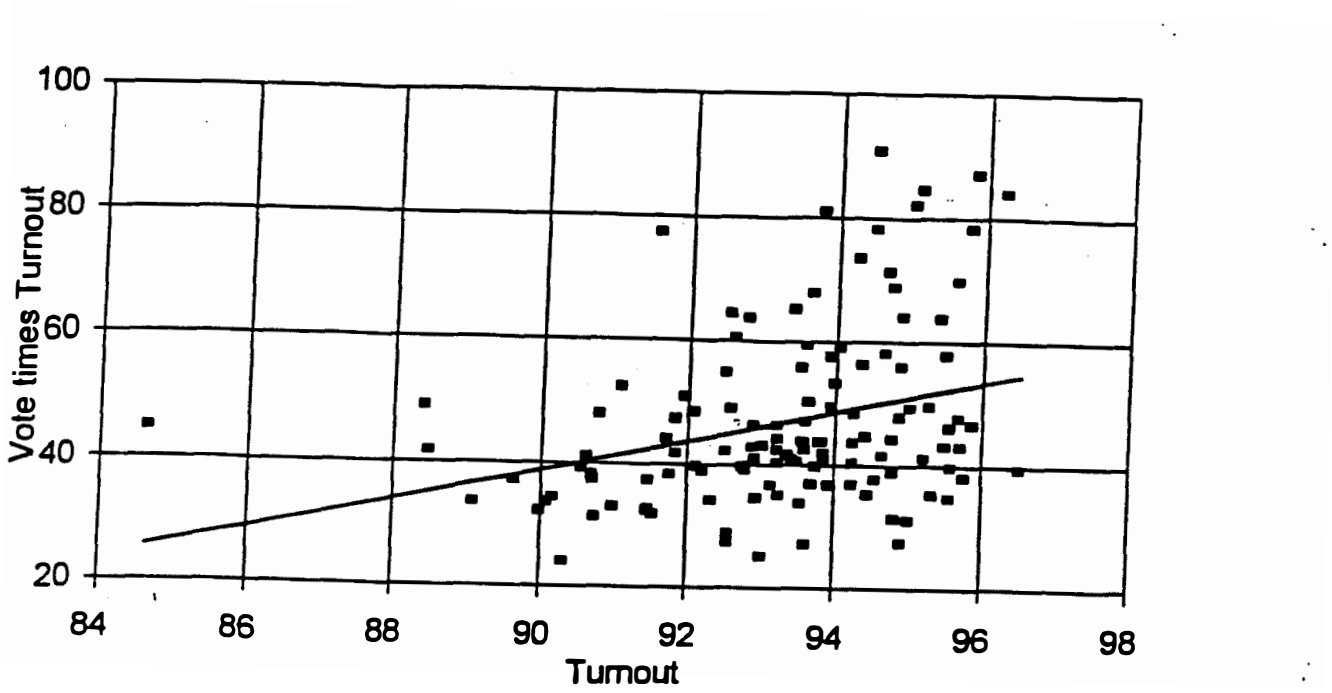


Figure 11 b: Quebec referendum 1995, Vote "No"

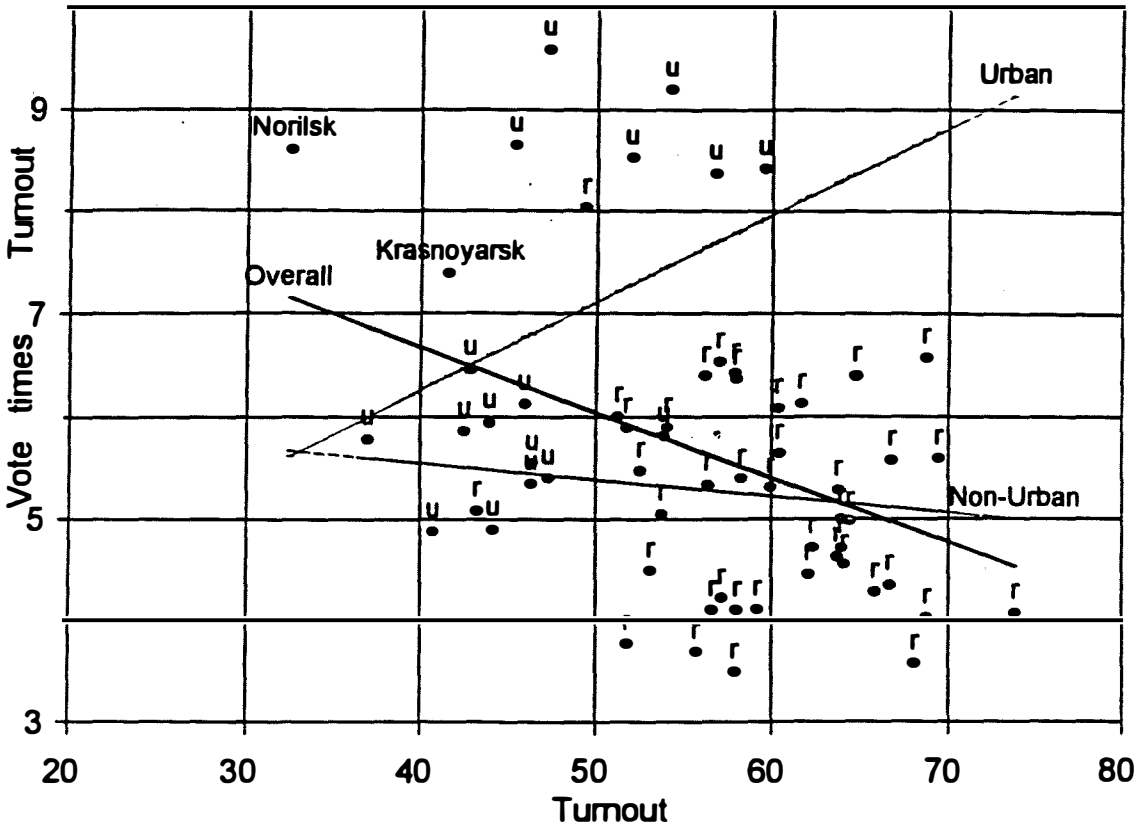


Figure 12: Vote for Russia's Choice in Krasnoyarsk Kray

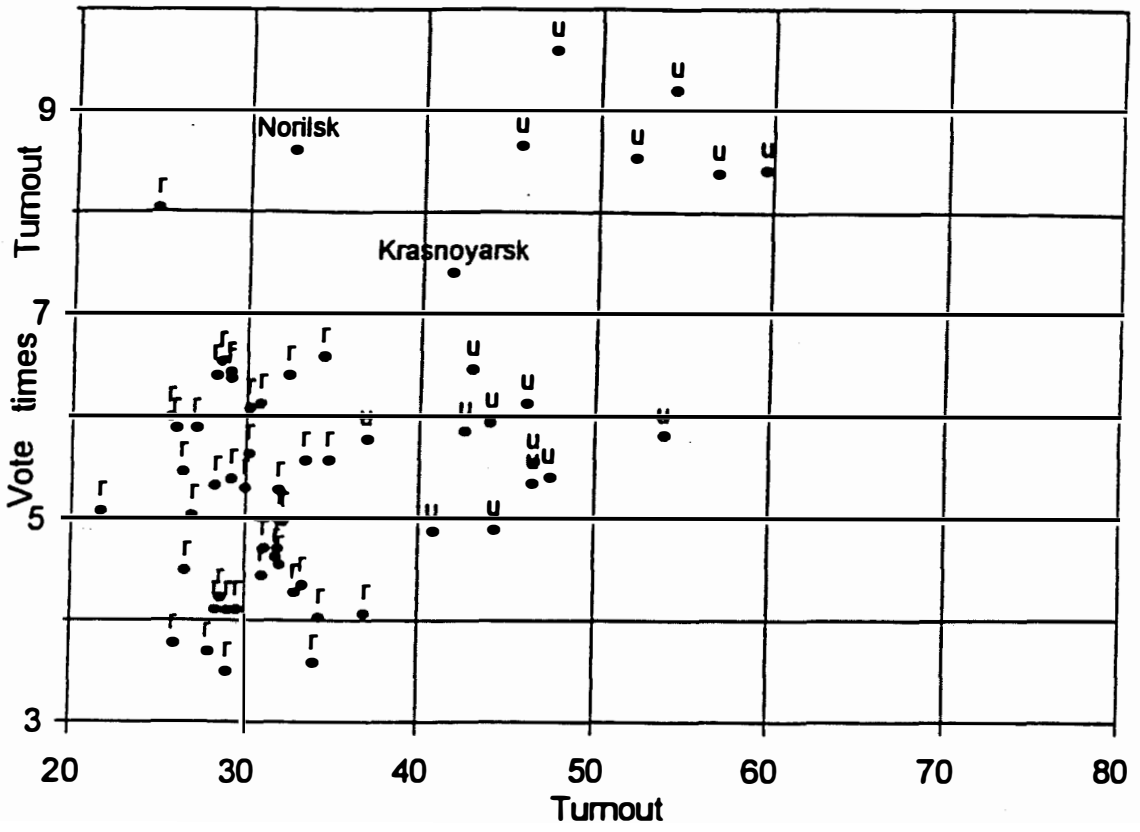


Figure 13: Vote for Russia's Choice in Krasnoyarsk Kray if true turnout in rural areas is half of that officially reported

Table I

Turnout in 23 Russian Regions

Region	December 1993			April 1993			1991		
	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum
Krasnoyarsk Kray	0.51	77.05	34.38	0.61	80.17	49.48	0.72	0.90	0.59
Archangelk obl	0.54	68.46	47.21	0.66	82.05	56.30	0.74	0.83	0.68
Briansk obl	0.64	83.29	55.35	0.68	87.29	55.25	0.82	0.99	0.73
Vladimir obl	0.60	72.91	50.98	0.70	82.16	62.68	0.80	0.89	0.73
Vologod obl	0.59	76.95	52.27	0.69	85.52	59.73	0.77	0.91	0.72
Voroneg obl	0.59	83.45	47.50	0.73	90.76	60.26	0.81	0.94	0.71
Kalinigrad obl	0.56	64.56	49.47	0.64	76.36	57.49	0.74	0.84	0.69
Kemero obl	0.53	75.58	44.83	0.58	84.53	43.37	0.70	0.91	0.62
Kirov obl	0.58	78.51	47.55	0.72	86.56	58.25	0.79	0.98	0.71
Kursk obl	0.64	80.99	42.66	0.70	88.93	48.81	0.85	0.97	0.67
Magadan obl	0.48	63.89	43.44	0.58	75.94	50.63	0.67	0.83	0.61
Murmansk obl	0.50	72.96	43.69	0.59	78.88	52.68	0.68	0.92	0.56
Nignii Novgorod obl	0.52	78.85	43.36	n/a	78.85	43.36	0.76	0.99	0.67
Novgorod obl	0.59	77.79	53.97	0.66	86.59	57.69	0.78	0.94	0.71
Orenburg obl	0.55	79.95	39.13	0.65	88.14	50.94	0.79	0.94	0.64
Penza obl	0.64	84.63	53.94	0.71	89.77	58.68	0.84	0.96	0.74
Permi obl	0.44	60.34	39.35	0.59	69.92	55.29	0.71	0.87	0.67
Saratov obl	0.58	84.59	47.97	0.68	91.43	54.05	0.78	0.97	0.71
Sachalinsk obl	0.50	63.16	43.46	0.56	72.56	47.60	0.70	0.85	0.65
Sverdlovsk obl	0.49	76.01	40.50	0.67	87.01	55.55	0.79	0.95	0.71
Smolensk obl	0.65	81.68	59.34	0.71	88.60	61.13	0.83	0.96	0.75
Tver obl	0.62	84.47	52.99	0.70	91.14	56.25	0.80	0.94	0.68
Tula obl	0.60	75.00	51.98	0.68	83.98	58.91	0.78	0.89	0.71

Table II

Correlation between Turnout and Vote times Turnout

	1991	April 1993	Constitution	Parties			Constitution Invalid	Party List Invalid
				Conservaties	Russia's Choice	All others		
Krasnoyarsk Kray	-0.32	0.26	0.70	0.90	-0.40	-0.68	0.41	0.58
Archangelk obl	-0.53	-0.07	0.60	0.75	-0.15	-0.60	0.62	0.07
Briansk obl	-0.57	-0.14	0.27	0.81	-0.41	-0.65	0.26	0.32
Vladimir obl	-0.39	0.21	0.50	0.86	-0.38	-0.69	0.34	0.44
Vologod obl	-0.35	0.14	0.69	0.83	-0.14	-0.60	0.30	0.21
Voroneg obl	-0.69	-0.76	-0.05	0.94	-0.64	-0.79	0.14	0.16
Kalinigrad obl	-0.35	0.46	0.73	0.69	-0.20	-0.49	0.60	0.36
Kemero obl	-0 65	-0.10	0.79	0.96	-0.58	-0.77	-0.06	0.09
Kirov obl	-0.47	-0.17	0.22	0.84	-0.29	-0.68	-0.11	-0.24
Kursk obl	-0.32	-0.45	0.17	0.96	-0.64	-0.87	0.03	-0.06
Magadan obl	0.23	0.86	0.71	0.91	-0.40	0.17	0.74	0.80
Murmansk obl	-0.47	0.52	0.80	0.87	-0.12	-0.43	0.67	0.32
Nignii Novgorod obl	-0.23	0.08	0.08	0.91	-0.53	-0.81	0.31	0.41
Novgorod obl	-0.64	0.37	0.85	0.91	-0.49	-0.63	-0.18	-0.26
Orenburg obl	-0.53	-0.27	0.45	0.92	-0.60	-0.79	0.26	0.36
Penza obl	-0.24	-0.42	-0.15	0.95	-0.61	-0.82	0.04	0.03
Permt obl	-0.27	0.57	0.89	0.75	-0.16	-0.54	0.50	0.32
Saratov obl	-0.48	-0.04	0.45	0.84	-0.31	-0.62	0.20	0.36
Sachalinsk obl	0.03	0.79	0.80	0.58	0.52	-0.07	0.16	0.16
Sverdlovsk obl	0.07	0.64	0.85	0.75	-0.17	-0.65	0.50	0.41
Smolensk obl	-0.70	-0.10	-0.30	0.94	-0.63	-0.83	0.04	0.75
Tver obl	-0.69	-0.15	0.01	0.96	-0.79	-0.88	-0.48	-0.40
Tula obl	-0.73	-0.28	0.37	0.94	-0.74	-0.85	0.05	-0.00

Table III

Correlation between the percent of Rural Population, Turnout and Support for Yeltsin

	Correlation between the Percent of Rural population and						
	Turnout			Vote for Yeltsin			Communists
	1991	April 93	Dec 93	1991	April 93	Dec 93	Dec 93
Krasnoyarsk Kray	0.68	0.77	0.79	-0.73	-0.04	-0.33	0.18
Archangelk obl	0.52	0.78	0.73	-0.62	0.34	-0.25	0.23
Briansk obl	0.83	0.80	0.81	-0.65	-0.21	-0.12	-0.05
Vladimir obl	0.82	0.81	0.85	-0.63	0.02	-0.29	-0.05
Vologod obl	0.78	0.82	0.76	-0.63	-0.04	-0.41	-0.17
Voronez obl	0.61	0.60	0.67	-0.53	-0.52	-0.65	0.22
Kalinigrad obl	0.58	0.54	0.32	-0.70	-0.06	-0.10	-0.09
Kemero obl	0.86	0.82	0.85	-0.72	-0.10	-0.22	0.00
Kirov obl	0.61	0.68	0.63	-0.69	-0.26	-0.53	0.24
Kursk obl	0.72	0.72	0.73	-0.58	-0.43	-0.40	0.28
Magadan obl	0.71	0.79	0.84	-0.82	0.60	-0.22	0.68
Murmansk obl	-0.16	0.14	0.13	-0.07	-0.14	-0.29	0.33
Nignii Novgorod obl	0.71	0.81	0.81	-0.72	-0.67	-0.67	0.48
Novgorod obl	0.82	0.81	0.80	-0.72	0.37	-0.11	0.40
Orenburg obl	0.76	0.86	0.84	-0.83	-0.44	-0.61	0.01
Penza obl	0.78	0.80	0.76	-0.71	-0.17	-0.39	0.17
Permt obl	0.26	0.65	0.45	-0.77	-0.11	-0.48	0.46
Saratov obl	0.83	0.81	0.85	-0.68	-0.21	-0.48	0.18
Sachalinsk obl	0.85	0.81	0.83	-0.57	0.52	0.12	-0.32
Sverdlovsk obl	0.50	0.57	0.64	-0.62	0.04	-0.41	0.48
Smolensk obl	0.71	0.67	0.58	-0.84	-0.36	-0.42	0.15
Tver obl	0.80	0.80	0.71	-0.70	0.07	-0.32	-0.15
Tula obl	0.77	0.80	0.81	-0.87	-0.45	-0.44	0.35

Table IV

Correlation between Vote (times Turnout) and Turnout for Russia's Choice in Urban, Non-Urban Areas and for whole Region.

Region	Rayons Urban	Non-Urban	Overall
Krasnoyarsk Kray	0.32	-0.24	-0.40
Archangelk obl	0.20	0.07	-0.15
Briansk obl	-0.32	0.02	-0.41
Vladimir obl	0.53	-0.12	-0.38
Vologod obl	n/a	0.07	-0.14
Voroneg obl	0.63	-0.35	-0.64
Kalinigrad obl	0.44	-0.13	-0.20
Kemero obl	-0.09	-0.49	-0.58
Kirov obl	0.40	-0.17	-0.29
Kursk obl	-0.66	-0.12	-0.64
Magadan obl	n/a	0.01	-0.40
Murmansk obl	-0.08	-0.03	-0.12
Nignii Novgorod obl	0.44	-0.33	-0.53
Novgorod obl	n/a	-0.45	-0.49
Orenburg obl	0.09	-0.38	-0.60
Penza obl	-0.52	-0.31	-0.61
Permt obl	-0.05	0.09	-0.16
Saratov obl	0.56	-0.08	-0.31
Sachalinsk obl	0.69	0.50	0.52
Sverdlovsk obl	0.36	-0.15	-0.17
Smolensk obl	n/a	-0.29	-0.63
Tver obl	-0.73	-0.61	-0.79
Tula obl	0.21	-0.63	-0.74

Table V

Difference in Turnout and Vote for Russia's Choice in Urban and Non-Urban Areas

	Vote for Russia's Choice			Turnout		
	Non-Urban	Urban	Difference	Non-Urban	Urban	Difference
Krasnoyarsk Kray	8.8	17.0	-8.2	59.0	42.0	16.0
Archangelk obl	16.0	25.0	-8.8	55.0	46.0	8.8
Briansk obl	9.3	17.0	-8.0	64.0	55.0	9.7
Vladimir obl	13.0	19.0	-6.3	59.0	53.0	6.4
Vologod obl	13.0	19.0	-6.6	60.0	51.0	8.8
Voroneg obl	7.7	19.0	-12.0	61.0	46.0	15.0
Kalinigrad obl	15.0	22.0	-7.0	53.0	51.0	2.2
Kemero obl	8.3	15.0	-6.4	60.0	45.0	15.0
Kirov obl	9.0	16.0	-7.3	57.0	49.0	8.0
Kursk obl	6.5	17.0	-10.0	68.0	50.0	18.0
Magadan obl	12.0	15.0	-2.5	50.0	42.0	8.2
Murmansk obl	19.0	25.0	-6.5	50.0	46.0	3.9
Nignii Novgorod obl	10.0	17.0	-6.6	53.0	42.0	10.0
Novgorod obl	12.0	15.0	-3.8	57.0	52.0	5.1
Orenburg obl	7.9	18.0	-9.8	61.0	43.0	19.0
Penza obl	5.7	11.0	-5.8	67.0	53.0	15.0
Permt obl	24.0	32.0	-7.6	42.0	38.0	4.3
Saratov obl	7.3	17.0	-9.4	63.0	47.0	16.0
Sachalinsk obl	9.3	11.0	-2.0	48.0	44.0	4.3
Sverdlovsk obl	15.0	27.0	-12.0	49.0	44.0	5.5
Smolensk obl	7.7	15.0	-7.7	67.0	57.0	10.0
Tver obl	10.0	19.0	-8.9	64.0	51.0	13.0
Tula obl	11.0	18.0	-6.5	59.0	52.0	7.2

Table VII

	Regions where local heads won the elections	Regions where local heads either were not run or ran and lost	All Regions
Number of observations	577	209	786
Number of regions	16	7	23
Correlation between the turnout and the turnout times the vote for -			
Constituion	0.06	0.03	0.01
Russia's Choice	-0.39	-0.50	-0.48
Yabloko	-0.51	-0.40	-0.48

Table VIII

Correlation between Turnout and Vote for candidates in Federal Council

	1'st Winner		2'nd Winner		third
Krasnoyarsk Kray	-0.33	Head, Kray Administration	0.20	Director of chemical company	0.21
Archangelk obl	0.03	Head, Oblast Administration	-0.54	Chairman Brick company	-0.56
Briansk obl	0.40	Former Head, Oblast	0.32	Military officer	-0.29
Vladimir obl	0.34	Head, Oblast Administration	0.12	Representative of the President	-0.27
Vologod obl	-0.61	Mayor, Cherepovets City	0.42	Head, Oblast Administration	0.41
Voroneg obl	-0.64	Head, Oblast Administration	-0.52	Executive of Oblast Administration	0.74
Kalinigrad obl	-0.34	Deputy Prime Minister	0.34	Head, Oblast Administration	-0.31
Kemero obl	0.45	Former Chaiman of Soviet	-0.27	Deputy chief of local newspaper	0.01
Kirov obl	0.06	Head, Oblast Administration	-0.14	Rector	-0.28
Kursk obl	0.75	Chairman of Soviet Councli	0.71	Head, Oblast Administration	-0.43
Magadan obl	-0.15	Joint Stock company director	-0.49	Director of constuction compuny	0.56
Murmansk obl	-0.15	Articservice company	0.47	Official of Oblast administration	-0.48
Nignii Novgorod obl	-0.44	Governor	-0.04	Chairman of Soviet Councli	0.45
Novgorod obl	0.66	Head, Oblast Administration	-0.22	Director	-0.65
Orenburg obl	0.50	Head, Oblast Administration	-0.64	Director	0.68
Penza obl	0.53	Head, Oblast Administration	-0.54	Head of City Administration	0.02
Permt obl	-0.11	director	-0.36	president of company	0.44
Saratov obl	0.60	Head, Oblast Administration	-0.02	First Deputy of Head of City Administration	-0.49
Sachalinsk obl	0.02	Head, Oblast Administration	0.03	Director	0.38
Sverdlovsk obl	-0.19	former Governor	0.14	no official position	0.01
Smolensk obl	0.74	Head, Oblast Administration	-0.83	Deputy Minister	0.70
Tver obl	0.62	Head, Oblast Administration	-0.61	Professor	0.57
Tula obl	0.67	Chairman of collective Farm	-0.26	President of Company Moscow resident	-0.63